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EVALUATION OF ADJUSTMENT ASSISTANCE PROGRAMS WITH APPLICATION FOR POLLUTION CONTROL

Bowdoin College

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The first is an examination of the adjustment or economic resource reallocation problem which arises when pollution control requirements are imposed on a firm or industry. Micro and macro aspects of adjustment are examined.

The second major element of this study is an examination of U.S. trade adjustment assistance policies.

The third section discusses the possible application of adjustment assistance concepts to the problem of pollution control. Factors to be considered in designing a program are discussed. The major elements of a model adjustment assistance program are presented.

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EVALUATION OF ADJUSTMENT ASSISTANCE PROGRAMS WITH APPLICATION FOR POLLUTION CONTROL

By

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Program Element No. 1HA093
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ABSTRACT

This report is an examination of adjustment assistance policies for pollution control. The report has three major elements.

The first is an examination of the adjustment or economic resource reallocation problem which arises when pollution control requirements are imposed on a firm or industry. Micro and macro aspects of adjustment are examined. The costs of adjustment are defined as the sum of real resource costs absorbed in the process of reallocation plus lost factor incomes. Policy objectives and policy instruments are identified and discussed.

The second major element of this study is an examination of U.S. trade adjustment assistance policies.

The third section discusses the possible application of adjustment assistance concepts to the problem of pollution control. Factors to be considered in designing a program are discussed. The major elements of a model adjustment assistance program are presented. Existing federal manpower and economic development programs which might be utilized as part of an adjustment assistance program are identified and briefly reviewed. And techniques for estimating possible magnitudes of economic impact are discussed.

This report was submitted in fulfillment of Project Number R-801-481, Appropriation Number 68X0100 under the sponsorship of the Environmental Protection Agency. Work was completed as of September 1974.

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SECTION I

CONCLUSIONS

Major conclusions of this study include:

1. The concepts of efficiency and equity as used in conventional economic analysis can be applied to the dynamics of adjusting to the impact of pollution control. The adjustment process itself involves real resource (opportunity) costs; and economic analysis can be applied to the goal of minimizing the sum of adjustment costs. Also the adjustment costs are distributed unevenly across the society. Therefore questions of equity in income distribution and the distribution of welfare arise.

2. Conventional economic concepts provide the analytical framework for evaluating policies toward adjustment assistance. First, the adjustment process involves market failures and imperfections; as a consequence adjustment costs are not minimized by the actions of individuals responding to market signals. These market failures and imperfections can be identified; and this analysis provides the justification for public intervention in the market to assist the adjustment process. Also the policy instruments available to the government have both efficiency and equity impacts. These must be analyzed and understood as part of the development of public policies toward economic adjustment.

3. A case can be made on both equity and efficiency grounds for public intervention to assist all kinds of adjustments to economic impacts, whether they be due to tariff cuts, pollution control requirements, or other major disturbances to an economic equilibrium.

4. There are both economic efficiency and equity elements in the present trade adjustment assistance policy. Present trade adjustment assistance policies are not well developed. A review of these policies yields several lessons, not only for improving trade adjustment assistance policies, but also for the development of adjustment assistance policies in other areas. Presently, the administrative processes for determin-

ing case and party eligibility are too cumbersome. The systems for delivering adjustment assistance benefits to intended recipients are not well developed. And there is still much to be learned about the design of manpower retraining and relocation programs to insure the maximum effectiveness of resources devoted to adjustment assistance.

SECTION II

RECOMMENDATIONS

Recommendations fall into two broad categories: those dealing with policy, and those dealing with additional research needs.

The policy recommendations are spelled out in Section VI. It is recommended that consideration be given at the federal level to developing a comprehensive adjustment assistance policy. The objectives of the policy would be to minimize the economic costs of adjustment, and to improve the equity of distribution of adjustment costs.

In the interim period before the implementation of the comprehensive adjustment assistance policy, states should identify potential impact areas and adjustment problems, and prepare contingency plans to tap existing federal manpower and community development programs to mitigate the possible impact of pollution control requirements.

Research is needed on the dynamic aspects of adjustment and resource reallocation. Also more and better research is needed on the effectiveness of present manpower and relocation programs in achieving stated efficiency and equity objectives.

SECTION III

INTRODUCTION

As required by the Water Quality Act of 1965, all states have now established water quality standards for their streams and begun implementation plans for achieving these standards. Furthermore, the 1972 amendments to the Clean Water Act move even further in the direction of strict pollution control standards by adding requirements for effluent control and treatment based on best practical and best available technologies by 1977 and 1983 respectively.

These successive steps toward more strict pollution control represent a change in the economic conditions faced by industrial water pollutors. When environmental regulations cause producers to incur higher costs because of pollution control requirements, there are several consequences. As relative prices change to reflect pollution control costs, consumers will shift their purchases to the relatively less expensive goods which are produced with lower pollution abatement costs. The reduction in the demand for high pollution goods is itself an element of the pollution control strategy. Also, the changing demand patterns trigger adjustments and resource reallocations among industries. More low pollution goods and fewer high pollution goods will be produced. Resources flow from the higher pollution industries which are contracting toward the lower pollution expanding industries.

These changes will have two kinds of impacts on firms in contracting industries. In general, firms will be able to accomodate the increased costs imposed upon them by pollution control requirements through some combination of reduced profits and higher prices charged for their products. These firms will be able to continue their operations without substantial changes in production levels or employment. In these cases, the costs of pollution control are spread out to consumers and stockholders in such a way that no one person is forced to bear a disproportionately large share of these costs.

However, there will be other firms which will be forced to or will choose to curtail production and employment substantially

or to cease operations all together rather than to take the steps necessary to be in compliance with these requirements. In these cases, labor and capital will be at least temporarily unemployed. Where the firms are significant parts of the local economy and where resources, especially labor, are not highly mobile, the result could be severe and prolonged unemployment and fiscal crises for the municipal governments. In these cases, the costs of pollution control are imposed directly on a relatively small number of people who are concentrated geographically. Ameliorating these concentrated impacts of pollution control policies should be a major concern of our environmental policies.

How significant are these effects likely to be? A study of the economic impact of pollution control requirements sponsored by the Council on Environmental Quality concludes as follows:

> Most of the firms or plants that will be forced to close are currently marginal operations (e.g. smaller, older, less efficient producers) that were already in economic jeopardy due to other competitive factors. In such cases, the impact of environmental standards is only to accelerate closings that would have occurred anyway. The pollution abatement costs either eliminate already slender profit margins or reduce them to a level at which they fail to justify the required capital expenditures in pollution abatement equipment (in terms of an adequate return on investment).
>
> There are approximately 12,000 plants currently operating in the industrial activities studied. Of these, it is expected that approximately 800 could close in the normal course of business between 1972 and 1976. It would appear from the contractors' evaluations that an additional 200-300 will be forced to close because of pollution abatement requirements. Many of these additional closings would appear to involve plants that were vulnerable for other reasons and, hence, that were likely to have closed anyway a few years later . . .
>
> The studies suggest that direct job loss attributable to environmental regulations in the affected industry activities examined may range from 50,000 to 125,000 jobs over the 1972-1976 period. These figures represent approximately 1% to 4% of the total employment in the industry activities studied. The direct average annual unemployment

> created in these industries represents .05% of the 1970 total national work force. However, the studies suggest that these estimates could be substantially higher if the economy is not at full employment (Council on Environmental Quality, 1972, pp. 10-11).

There is a substantial need for more knowledge of the likely nature and magnitude of these economic impacts of pollution control requirements. A better understanding of the nature of these impacts and the process of economic adjustment is a prerequisite to the consideration of the policy alternatives. One objective of this study is to examine and describe the process of economic adjustment to pollution control at the conceptual level and to define adjustment costs. This theoretical discussion will then be made the basis for the consideration of criteria for judging the outcome of the adjustment process and for discussing and evaluating policy alternatives.

One type of policy alternative to be considered is to provide public assistance to the economic adjustment process. A program of adjustment assistance has been developed and applied as part of the international trade policy of the United States. What is adjustment assistance? As defined by Bale:

> Adjustment assistance is the provision of assistance by the government to the owners of resources in order to encourage them to adjust to a change in the economy. In the widest sense, state unemployment insurance may be considered an adjustment assistance measure as payments are given (among other reasons) to assist a worker to adjust to a structural or seasonal change in his employment status -- to facilitate his mobility between one job and another. The concept behind adjustment assistance is that persons or industries displaced or rendered redundant by technical change or changing economic conditions which are beyond their control should be assisted by public funds. They should qualify for government assistance since their capital in terms of skilled labor and management (and sometimes plant and equipment) may be lost to society if they are not eased into other occupations. Presumably then, assistance measures are largely based on the assumption that the gain to society exceeds the cost. (Bale, 1973a, pp. 4-5)

As applied to the pollution control problem, adjustment assistance would consist of some combination of direct payments

and other assistance activities to labor and capital for the purpose of facilitating the adjustment of these resources to the newly imposed environmental standards where these standards result in unemployment and economic losses. Where pollution control action would result in idle facilities, lack of profits, or unemployment of labor or capital, firms would be able to obtain technical assistance for development of new products or lowering costs, and low interest loans or loan guarantees for new equipment of a conversion to a new activity where markets are better. Workers would be able to obtain unemployment compensation and relocation allowances for moving to areas where the prospects of employment were better. Workers would also be eligible for retraining programs and grants to support them while they learn new skills. In addition, a pollution control adjustment program might make provision for financial aid to municipalities which lose tax revenues because of a loss of industry.

There are several reasons why the adjustment to new pollution control standards could be considered a public policy issue. One has to do with the basic purposes of an economic system.. We take the position that one of the functions of an economic system is to provide productive, rewarding work opportunities which enable workers to achieve a reasonable standard of economic life without disrupting community and family ties. To the extent that workers experience prolonged unemployment because the enterprise for which they work has been shut down, the economic system has failed in this function, and society has a responsibility to take steps to correct this failure. The emphasis on preventing the disruption of community and family ties means that reemployment within the region may be preferable to worker relocation. Certainly this point of view raises some basic ethical issues which are beyond the scope of this study.*

Within the confines of traditional welfare economics there are two justifications for public policy concern with adjustment problems. The first is economic efficiency, that is assuring the most efficient utilization of available resources. When resources are idle or unemployed, even if only temporarily, there is a real economic cost or loss in the form of the potential output from those resources which is

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*To a certain extent, these issues are recognized in the design of the trade adjustment assistance program. Workers may lose adjustment assistance benefits if they refuse to undertake manpower training when offered. However, there is no comparable compulsory provision with respect to offered relocation assistance.

foregone. To the extent that public policy can facilitate the movement of idle resources back into productive employment, it reduces these opportunity costs of adjustment and increases economic welfare.

The second justification for public policy concern with economic adjustment is the desire for equity in the distribution of economic welfare. The movement to higher standards of pollution control involves the imposition of costs as well as the creation of benefits. The incidence or distribution of these costs among the members of society is a valid concern for public policy. In particular where a political decision changes the rules of the economic game in such a way as to impose costs on certain groups, the distribution of these costs should be of concern to those political decision-makers who are changing the rules. While economic analyses cannot tell us what constitutes a "just" distribution of welfare, or what is the appropriate distribution of the burdens of pollution control, questions of equity are still within the domain of economic policy making.

Adjustment assistance policies such as those embodied in the Trade Expansion Act of 1962 typcially involve a mixture of economic efficiency and equity considerations. For example, stipends which are paid to heads of households who are participating in manpower training programs serve both equity and efficiency purposes.

In the next section of this study, the adjustment problem is examined at a conceptual or abstract level. The costs of adjustment are defined and the principles which would guide the development of appropriate assistance policies are discussed. The questions of criteria and objectives are considered as are the interactions of efficiency and equity goals in the formulation of policy. It is shown that because of imperfections in market processes, private markets are not likely to minimize the costs of adjustment in the absence of public intervention. We finally consider the range of policy instruments for facilitating efficiency and equity in adjustment.

This country has only limited experience with public programs to facilitate adjustment to changing economic conditions. The bulk of our experience is very recent and derived from the adjustment assistance provisions of the Trade Expansion Act of 1962. The relevant provisions of this act are described and our experience with trade adjustment assistance is reviewed in Section V.

Section VI draws upon the analytical framework of Section IV and the experience and knowledge of trade adjustment assistance

of Section V to discuss the development of an adjustment assistance program for pollution control. After discussing the ways in which value judgments about objectives can influence several important features of program design, this section presents the outline of a proposed adjustment assistance program which is consistent with and follows from explicitly stated value judgments.

SECTION IV

THE ADJUSTMENT PROBLEM

Most economic analysis of pollution control is comparative static in nature. That is, it compares the descriptive parameters of alternative static or stationary equilibrium positions.* However, for the type of problem to which this study is addressed, the comparison of alternatives of stationary positions is insufficient. An understanding of what happens to the economy as it moves between equilibriums is more important than the description of the new equilibrium position. By adjustment process we refer to the movement of the economic system between two equilibrium positions, the first in which there is no pollution control requirement and the second position after the economy has fully adjusted and responded to the imposition of effective pollution control requirements.

In this chapter, we are concerned with several questions about the path of the economic system between these equilibrium states. Where does this path take us? How long does it take to travel the path? What problems and pitfalls are likely to be encountered along the way? What costs are incurred in the process itself? And can these costs be reduced by appropriate public policies?

THE ADJUSTMENT PROCESS: A MICRO VIEW

In this section the adjustment process is described in terms

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*The use of the concept of equilibrium calls for some comments concerning economic methods. Equilibrium is a state in which there are no forces tending to produce change in the economic system. Of course, the economic system is never really in equilibrium. Equilibrium in this usage is a hypothetical construct. It refers to a target given by the constellation of economic forces toward which the economic system tends to move. In a dynamic economy, since the forces are constantly shifting, the target is moving. Nevertheless, the notion of a target is still useful.

of changes in costs, prices of goods and factors, changes in outputs and input combinations and resource reallocations, all in the context of a market economy. It is assumed that there is no government intervention in the adjustment process. The next section examines the possible consequences of the adjustment process for macroeconomic variables such as aggregate income and employment.

To build up the picture from its basic components, consider a single firm in a competitive industry. It has long run average and marginal cost curves as shown in Figure 1. If the firm and industry are in equilibrium, market price is P_1 and the firm's output is X_1. Now assume that a new pollution control requirement has been imposed on this firm. The firm must incur higher costs of production as it purchases different kinds of material inputs, purchases and operates treatment systems, or makes changes in its production processes. This can be represented as an upward shift in the marginal and average cost curves of this firm.

If this is the only affected firm and market price does not increase, price is below the new long run average cost; and the firm incurs losses. Sooner or later the firm will go out of business, releasing the resources it has employed for other uses. This is the first step in the adjustment process.

But if all firms in the industry are affected similarly, there will be adjustments in market prices. Figure 2 shows the industry demand curve and the supply curve before and after the imposition of pollution control. The higher market price is accompanied by a reduction in total industry output. Unless the pollution control technology is such that the optimum size of firm is now smaller, the new equilibrium X_2 and P_2 will represent a smaller number of firms. Which firms go out of business will depend on such factors as capabilities and characteristics of management, age of plant and equipment, and differences in technologies utilized.

The above describes adjustment in a competitive industry. But if the industry is oligopolistic or monopolized, there is not likely to be any change in the number of firms. Rather oligopoly or monopoly firms are likely to adjust by reducing output levels at existing facilities and, in the case of multiplant firms, perhaps, by closing some plants. But in any event, the changes in price and output will be in the same direction as under competition.

So far this has been a partial equilibrium, comparative static description of a more complex, dynamic series of resource movements and reallocations where the precise direction and

FIGURE 1

SINGLE FIRM'S COST CURVES

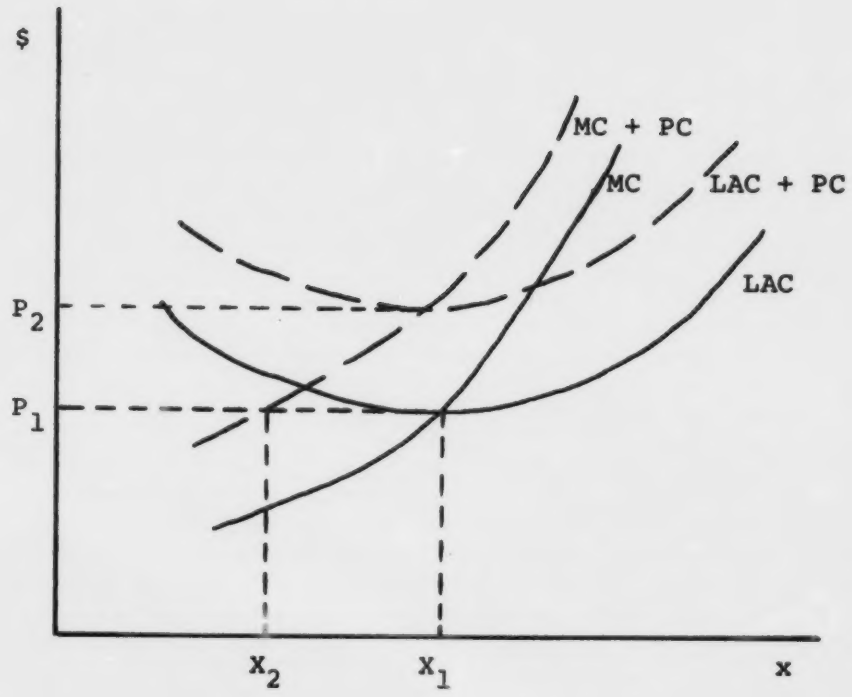
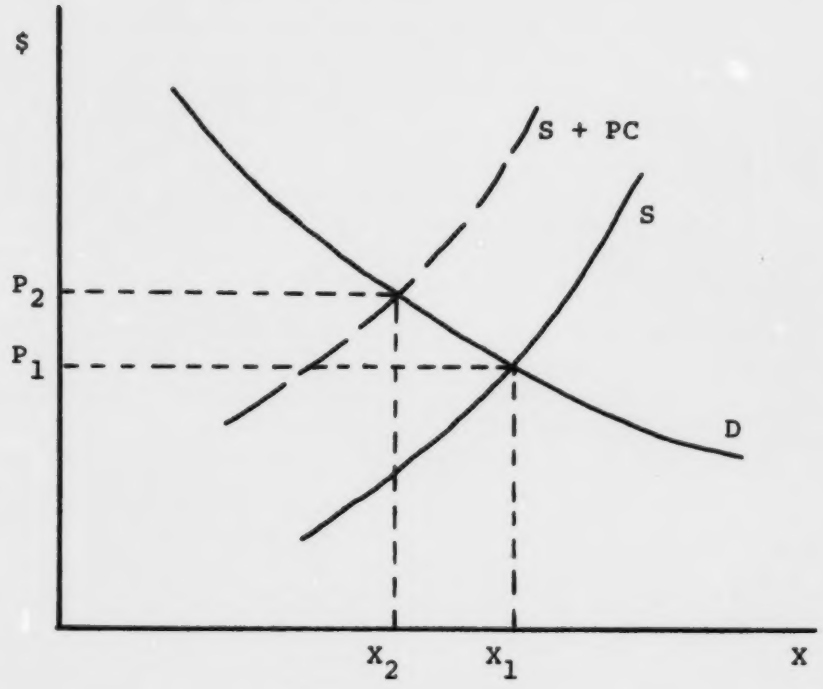


FIGURE 2

INDUSTRY SUPPLY AND DEMAND CURVES



magnitude of these resource movements depend upon the circumstances of the particular case. First, for those firms continuing in the business, there are likely to be resource allocations within the firm. Resources can be shifted from productive activities to pollution control activities. This kind of adjustment poses no particular policy problem and will be of no more concern here.

Firms or single plants of multi-plant firms which close thereby release resources to be reabsorbed in the economic system elsewhere. Those firms which remain in production may be either net demanders or net releasers of resources, depending upon the magnitude of cost shifts and elasticities of demand and supply. But even though a firm may be a net demander of resources, it may be releasing resources of a particular type. For example, firms could be releasing production workers while hiring process control engineers. Also, if this industry is connected through direct input-output linkages with other industrial activities, there will be additional resource allocation effects. For example, if this industry has as an input an intermediate product from some other industry, the output changes in this industry will have corresponding impacts on output and resource use in the intermediate good industry.

There are forces which also lead directly to the reemployment of released resources. For example, in addition to this industry's own employment of resources in pollution control, it may be purchasing inputs from a pollution control industry. Expansion of the output of that industry would absorb some of the resources released from production in this industry. Finally, there are market substitution effects brought about by the changes in relative prices. The increase in the price of this good means increases in the demands for, production of, and resource employment in other substitute goods.

The beauty of the market mechanism to economists is that it provides signals and incentives to guide and induce the appropriate resource movements in response to a basic change such as the imposition of pollution control. But the market does not always work perfectly. There are problems at both the micro and macro levels in the reemployment of released resources. Although it is often assumed to be the case in conventional analysis, resource mobility is not perfect. There will be periods of unemployment for resources being released. And the process of relocation is itself costly in real resource terms.

What are the factors which determine the degree of resource mobility and the speed of adjustment to a new equilibrium?

At this point it becomes necessary to distinguish between capital and labor as factors of production. Capital refers to a heterogeneous mix of non-human durable assets used in production processes. The heterogeneity of capital makes it difficult to generalize about factors influencing the speed of adjustment and reemployment of labor inputs. Baldwin and Mutti (1973) have reviewed a substantial body of literature in labor economics that sheds some light on the speed and effectiveness of the adjustment process for labor where workers have lost their jobs because of various structural changes in the economy such as automation, shifts of production to lower wage areas, and changes in the pattern and structure of demand. The factors that influence the speed of reemployment and whether reemployment occurs at comparable wage rates can be summarized as follows:

1. Age of Worker. This may be the single most important variable affecting reemployment opportunities. The older the worker, the more difficulty he has in finding a new position. This is partly because employers regard older workers as having reduced physical capabilities in comparison with younger workers, as being more difficult to train in new skills, and as representing a lower net return because of the higher present value of future pension liabilities and the shorter payout period for recouping the costs of on the job training.

2. Education. Education may be a proxy for the transferability of certain kinds of skills as well as representing the ease with which new skills can be obtained with on the job training by the new employer.

3. Skill Levels. It is more difficult to generalize about skill levels since particular skills may be difficult to transfer to other occupations, and supply/demand conditions for various skill categories may be quite different. Nevertheless, more skilled workers will usually have an easier time finding employment than those without skills.

4. Sex. Women have been discriminated against and find it more difficult to find employment after shifts in the job market.

5. Race. Similarly, minority racial groups have been discriminated against systematically in the labor force.

6. The Level of Unemployment within the Region. General labor market conditions influence the speed at which the regional economy can reabsorb the displaced workers.

These considerations make it clear that the manner in which

a regional economy will adjust to a changing situation and its potential needs for adjustment assistance vary substantially with the situation at hand. For example, the age structure of the population as a whole and of the unemployed workers will affect labor mobility, labor productivity, and speed of adjustment to a new equilibrium. Economies with a labor force characterized by an older than average age structure will have a different kind of adjustment problem, one that would call for, perhaps, different kinds of public policies. Geography and the size of the local economy and its linkages with the larger regional economy are important. For example, a small isolated town will have a different kind of adjustment problem than a similar size town which is close to a large metropolitan region. In the latter case, unemployed labor may be reabsorbed in the larger regional market without forcing workers to change their residences.

Finally, industrial characteristics and the nature and degree of unionization of the affected labor force may substantially affect the readjustment process. For example, a strong union which is able to protect seniority and can itself provide adjustment assistance services to its members may substantially speed the adjustment process.*

The less mobile the resources released because of pollution control adjustment and the more prolonged their period of unemployment, the more severe and significant will be the micro aspects of adjustment. We turn now to a macro view of the adjustment process.

THE ADJUSTMENT PROCESS: A MACRO VIEW

There are likely to be four kinds of macroeconomic effects on a regional economy stemming from the imposition of pollution control in the presence of imperfect mobility and adjustment. They are the multiplier induced changes in regional income; changes in regional employment; interregional factor flows, especially of labor; and local fiscal impacts due to loss of local tax base.

Regional Income

It is assumed that it is meaningful to treat a given geographic region within the country as an economic entity for

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*For a case study of such a situation, see (Stern, 1969).

certain analytical and modeling purposes.* The process of regional income and employment determination can be represented by a model based on the Keynesian macroeconomic income/expenditure model. Regional expenditure is defined as the sum of purchases of products and services by residents of the region and those who are located outside the region.

$$E = R + X \tag{1}$$

where E = expenditure on the product of the regional economy

R = expenditure on regional product by residents of the region

X = expenditure by non-residents on regional output ("exports")

Regional expenditure, R, has two components, one which is autonomous and represented by A, and one which is assumed to be a constant proportion (less than 1) of regional income. The autonomous component of regional expenditure could include capital formation, government purchases of goods and services, as well as an autonomous component of household intraregional consumption expenditure. Thus:

$$R = A + bY \tag{2}$$

where Y = income generated from regional production.

---

*Regions may be defined on any of three bases, depending upon the particular focus of the regional analysis being undertaken. These three bases are: homogeneity of the region, emphasizing the similarity of various economic characteristics and their uniform response over the entire region to a given autonomous change; nodal points, stressing the interdependence of a market center and its surrounding subareas and the structure of intraregional flows; and planning or programming criteria, following governmental boundaries for ease of policy implementation. For a more complete discussion, see (Richardson, 1969, pp. 223-231). This is also a comprehensive reference for the theory of regional analysis. See also(Nourse, 1968), (Mattila and Thompson, 1955) and (Meyer, 1963).

A regional economy is said to be in equilibrium when there are no forces tending to change the level of regional income. Regional equilibrium is achieved when regional income is equal to regional expenditure. For example, if expenditure were less than income, the production level generating that income could not be maintained, and production and income would fall.

Substituting Equations (1) and (2) into the equilibrium condition (Y = E) and taking first differences yields the regional income multiplier equation:

$$\Delta Y = \left(\frac{1}{1-b}\right) \Delta A + \left(\frac{1}{1-b}\right) \Delta X \qquad (3)$$

The term in the parentheses is the regional income multiplier, and will be greater than one if b, the regional marginal propensity to spend out of regional income, is less than one. Equation (3) says that any exogenous change in spending on regional product will lead to a larger or multiplied change in regional income in the absence of any countervailing forces or compensating policies.

A pollution control requirement imposed upon a firm within the region may result in a reduction in one or both of the autonomous components of regional expenditures, depending on whether the firm was producing for the local market or for export. This would be the case if the firm were to shut down or substantially reduce output due to higher costs. In either case, the pollution control requirement would further reduce regional expenditure and income through the multiplier process.

Regional Employment

If it could be assumed that output per worker was the same for all workers and constant throughout the multiplier process, then this simple multiplier model would also yield a prediction of the regional employment effect of pollution control. Under these assumptions the employment multiplier would be the same magnitude as the income multiplier of Equation (3).

In the short run, however, it is not at all certain that output per worker will be constant. There is a certain degree of flexibility in the possible reactions of local employers to abrupt changes in regional demand. Existing personnel may be more or less fully utilized in response to sharp rises or falls in trade, rather than taking the more extreme measure of adjusting the number of employees. The

key element is expectation. If the change in expenditures is expected to be temporary, regional output per worker can adjust because of such devices as, for example, changes in overtime rates. Output per worker will rise with increases in expenditure and fall with decreases, if the changes are expected to be temporary. As a result the employment multiplier will be less than the income multiplier, and employment changes will be proportionately less than income changes. Over a somewhat longer period of time, however, if the change in regional expenditure continues, or is at least viewed as tending to do so, there may be a larger change in regional employment as output per worker is restored to its long run equilibrium value.

The effect of the multiplier process on regional income when pollution control is imposed can be shown schematically, as in Figure 3. Corresponding to the multiplier model, assume that there are no increases in spending from other sources to make possible the rehiring of resources released from pollution control. Then if the pollution control program couses the release of resources which were earning B-C in regional income at time t_1, regional income will fall to a new equilibrium level 0-A by the time the multiplier process has worked itself out.

At the opposite extreme, suppose that there are exactly offsetting expenditure changes such that the resources released due to pollution control are immediately reemployed in other activities. Then regional income and employment would be unchanged in the aggregate; and regional income would be maintained at 0-C after t_1 in Figure 3.

Figure 4 shows the time pattern of regional income when adjustment and reemployment is complete but not instantaneous. The initiating fall in expenditure occurs at t_1; and the multiplier process begins. But by t_2, the offsetting increases in expenditure from other sources have begun to result in reemployment of the originally unemployed resources. If adjustment is complete, soon the positive multiplier effects dominate and income is restored to the original level by time t_3.

Figure 4 shows the limiting case of full adjustment and reemployment within the region at original income levels. There are two reasons why the new equilibrium level for regional income might be below 0-C. First, the initial reduction in regional income may induce factor out-migration as part of the adjustment process. (See below). With fewer factors remaining in the region, regional income will be lower, even after full adjustment. Second, some factors may have been receiving quasi-rents in the initial equilibrium.

FIGURE 3

MULTIPLIED REGIONAL INCOME LOSS

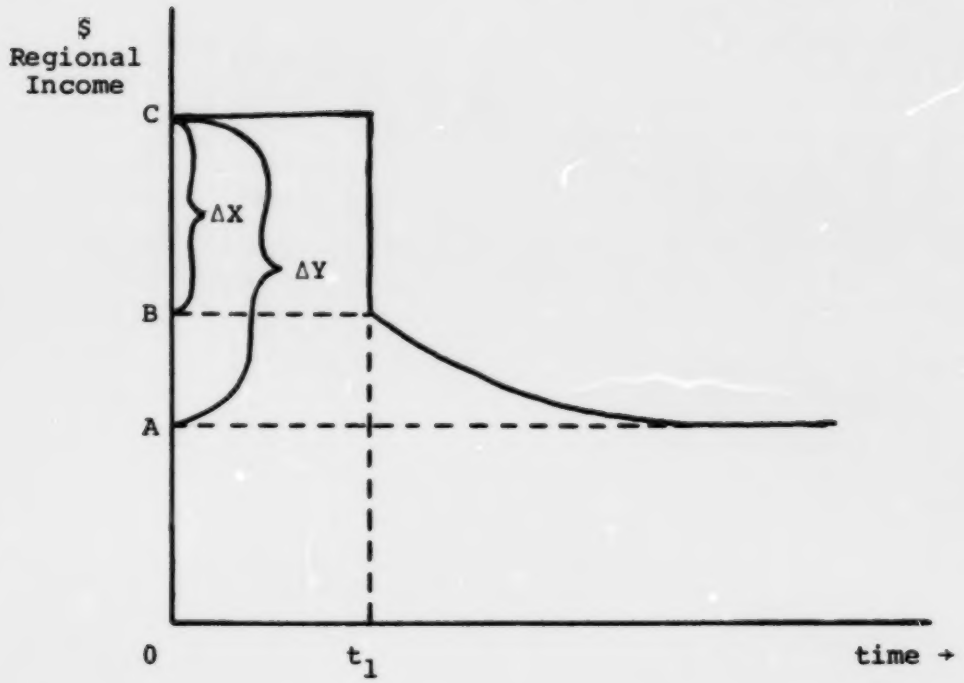
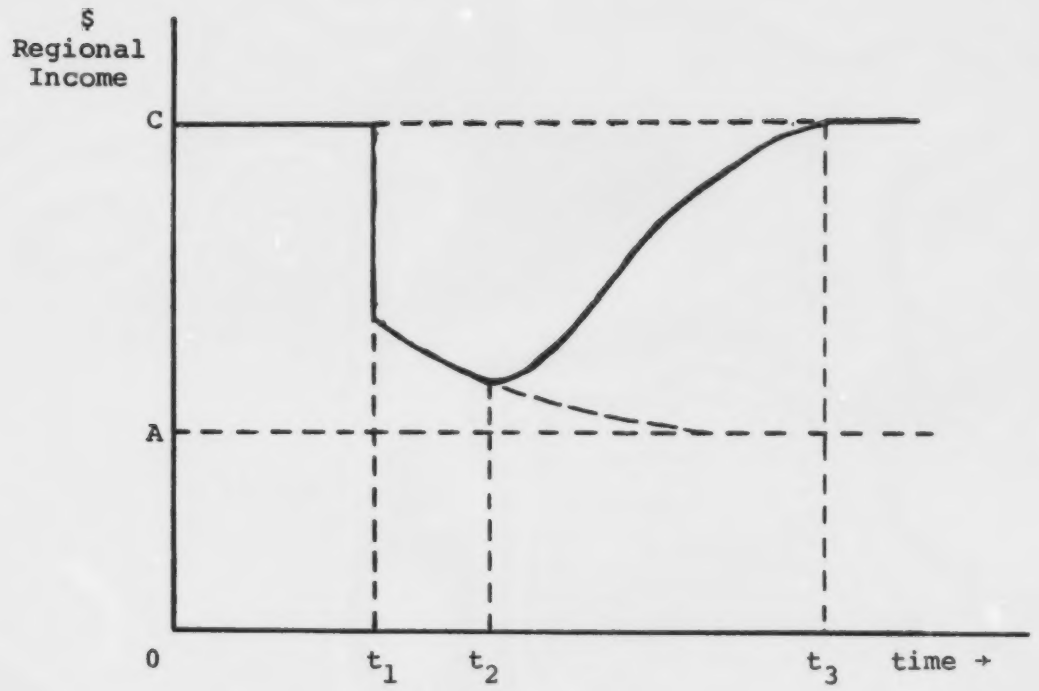


FIGURE 4

MULTIPLIED REGIONAL INCOME LOSS
WITH ADJUSTMENT AND REEMPLOYMENT



Changes in price, costs, and nature of the economic activity may reduce aggregate quasi-rents in the region even after full adjustment.

Factor Migration

The third kind of macro effect related to the adjustment process is the migration of labor. If offsetting expenditures and positive multiplier effects do not restore regional income and employment to their original levels, the major adjustment mechanism open to redundant labor is migration out of the region in search of better employment opportunities elsewhere. Whether the migration adjustment mechanism should be encouraged or not raises issues which cannot be settled on *a priori* grounds. For example, one set of questions revolves around the optimum distribution of population among regions. Is the migration leading toward a more favorable population distribution? Another set of questions concerns the real resource cost and psychic costs of migration relative to the costs of alternative adjustment mechanisms.

Regional Fiscal Impacts

There is one other macro effect which must be noted even though it does not fit easily into the framework established above. State and local governments depend heavily on the taxation of regional income, regional expenditure, and regional real property values to obtain the revenues necessary to meet the demand for publically provided goods and services. As has been noted, the adjustment process may include reductions in regional income and expenditures. It may also lead to either temporary or permanent reductions in the value of real property, i.e., land, structures, and equipment subject to property taxation. Since state and local governments will rarely experience an exactly offsetting decline in the demand for public goods and services, governmental units which experience a decline in tax revenues as a consequence of the adjustment process must undertake offsetting tax steps. In other words they must redistribute the tax burden in some way. This will almost always involve an increase in the "excess burden" associated with the tax structure.* This excess burden is a further induced real cost associated with the adjustment process.

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*Excess burden is the deadweight loss or reduction in net economic activity caused by the price distorting effects of taxes. For further explanation, see any good text in public finance, e.g., (Musgrave, 1959) or (Due and Friedlaender, 1973).

THE COSTS OF THE ADJUSTMENT PROCESS

There are two kinds of costs associated with the adjustment process:

1. Mobility Costs. These are the opportunity costs of the real resources absorbed in various phases of moving those factors of production released from the contracting industry into new employment. This includes both private and public sector costs. Mobility is used here in the broadest sense to include movement among occupations and industries as well as regions. Mobility costs include the time and resource costs of job search and gathering information, retraining and manpower programs, and the costs of adapting capital equipment and buildings to new kinds of activities, as well as the costs of moving resources from one location to another.

A full accounting of mobility costs would include the psychic costs to workers of dislocation, i.e., the disruption of family and community ties, anxiety due to moving to a strange community, etc. These costs may be the most significant component of mobility costs but they are difficult to quantify and there is little evidence regarding their magnitude.

2. Lost Factor Incomes. These are the factor incomes lost because of periods of unemployment between the old equilibrium and the achievement of the new equilibrium. These costs include not only lost incomes of factors released from the polluting industry directly, but also those due to input-output linkage and multiplier effects as well. Lost factor income is an opportunity cost. Ultimately it represents the value of the additional output which could have been produced by those factors had they been immediately reemployed.

The costs of adjustment must be measured from a national rather than a regional point of view. Otherwise a very distorted view of the significance of adjustment costs is obtained. Consider, for example, a displaced worker who moves out of the region to gain employment at his old wage in a new area. An accounting of mobility costs undertaken within the region may fail to pick up all or part of the worker's cost of moving, thus understating this component of total adjustment cost. On the other hand, recording the reduction in factor incomes within the region would overstate this component of adjustment cost since it would not take into account the reemployment of the worker outside the region.

It is important, also, to distinguish between real resource costs or opportunity costs on the one hand, and transfer pay-

ments on the other hand. Only the former are counted as adjustment costs. Transfer payments such as social security benefits or unemployment compensation involve only shifts of purchasing power from one individual to another. One person's gain is another's loss. Transfer payments show up as expenses in government budgets; but they are not costs from the point of view of the society as a whole.

In summary, then, mobility costs represent the costs of completing the adjustment process; while factor income costs represent the cost of uncompleted adjustment. What is important for policy is the sum of mobility costs and lost factor income costs -- both measured from a national point of view.

POLICIES FOR ADJUSTMENT

The development of public policies to deal with the problems caused by adjustment and the existence of adjustment costs requires first the establishment of criteria or objectives by which alternative policy designs can be judged, and second the identification of policy instruments, i.e., means of controlling or influencing instrumental variables so as to achieve the stated objectives.

The criterion most widely accepted among economists is efficiency in resource allocation. A set of marginal equality conditions can be derived, the attainment of which constitutes a set of necessary conditions for efficiency in resource allocation. For example, efficiency requires that pollution control activities be carried out to the point where the marginal benefit of an additional unit of reduction in pollution is equal to the marginal cost of obtaining it.

Application of the efficiency criterion to the problem of adjustment costs yields the objective of minimizing the sum of mobility costs (both private and public) and lost factor income costs. It is assumed that at least over some range there is an inverse relationship between mobility costs incurred and lost factor income costs, i.e., the more resources devoted to mobility the lower will be the total of lost factor incomes. In other words, it is assumed that the marginal productivity of resources in mobility is positive, but decreasing. Given these assumptions, the objective of minimizing total adjustment costs requires devoting resources to increasing mobility, i.e., speeding adjustment, so long as the marginal yield in terms of factor income loss avoided

exceeds the marginal value of resources spent in adjustment.*

One might question whether this condition isn't automatically met in a market economy through the actions of utility maximizing individuals. In order to justify public intervention in the adjustment process (or public policies to assist adjustment) under the criterion of economic efficiency or minimum aggregate adjustment costs, it is necessary to show why private economic actors responding to market signals will not themselves minimize aggregate adjustment costs. There are at least four kinds of market imperfections or market failures which could be the basis for public intervention. Identifying the form of private market failure or imperfection also may suggest the nature of the appropriate public policy response or directive.

Information Costs

There are economies of scale in collecting and disseminating information on economic alternatives. Also information has some of the characteristics of a public good. As a consequence, private economic actors will not devote the optimal amount of resources to information gathering. The optimal information level is where the marginal social benefit of information is equal to the marginal social cost of obtaining it. There is an economic justification for providing information on the job market and job opportunities for labor and technical and marketing information for firms. It should be noted, however, that this justification is not limited to the case of economic adjustment to pollution control.

Capital Market Imperfections

Where capital markets are perfect, the marginal expected return on investment would equal the marginal opportunity cost

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*A more rigorous analysis of the problem in mathematical terms would show that the proper objective is minimization of the discounted present value of the stream of combined mobility and factor income costs over an indefinite future. The analysis would reflect the fact that in any time period, t, there are many types of mobility activities which can be undertaken at different levels, M_{it}, and that at time $\bar{t}$, the lost income of the jth factor, $F_j\bar{t}$, would depend on M_{it} for all i and all $t<\bar{t}$. It does not appear that any simple functional form for this set of relationships can be deduced or assumed on a priori grounds. Thus the first order optimum conditions are not likely to be translatable into any operational rules for policy makers.

of investment. Capital market imperfections create divergences between expected returns and opportunity costs at the margin. The literature on human capital formation has recognized capital market imperfections as an important cause of underinvestment in human capital (Becker, 1962). And such imperfections can also result in private decisions which allocate too few resources to activities related to adjustment to pollution control.

The capital market imperfection of most concern here stems from the reluctance of financial institutions to make essentially unsecured loans to individuals where the ability to repay depends on expected future increases in earning power. In the absence of something approaching legalized slavery, banks find such loans to be potentially very risky. Government guarantees of private loans or government loan funds or subsidies are required to bring expected returns and opportunity costs into equality.

When a worker moves to a new locality in search of a job or to take a job which is known to him, there are real economic costs to him in making the move. Economic analysis treats the incurring of these costs as an investment made to reap a higher future income stream. If capital markets were perfect, workers would be willing and able to incur relocation expenses up to the point where the marginal expected return in the form of future income streams was just equal to the marginal opportunity cost of capital. However, imperfections in the capital market provide a barrier to the optimal degree of factor mobility.

Where a worker has invested in obtaining a specific set of skills to be utilized in an occupation, and where because of a change in the economic structure he is no longer able to find employment for these skills, the value of his human capital is diminished. He may find it necessary to make additional investments in new skills in order to find alternative employment opportunities. Again, capital market imperfections may bar him from making or undertaking the optimal degree of investment in skills and training. Public subsidy of training and education for dislocated workers may be justified on these grounds.

It should be emphasized that this argument is based on the notion that economic dislocations may destroy the value of past investments in human capital while capital market imperfections may prevent dislocated workers from making new or replacement investments. Hence this argument is specifically directed at the problem of economic adjustment. It should be distinguished from the more general arguments for continuing to subsidize investments in training and educa-

tion aimed at upgrading the skill levels and earnings capabilities of unemployed or marginally employed workers. In the latter case, the argument is made that capital imperfections have prevented the optimal level of investment in human capital to begin with.

Externalities in Training and Education

It is sometimes argued that there are benefits to others besides the worker, benefits which he cannot capture in the form of higher earnings (Weisbrod, 1964). Even with perfect capital markets, if there are externalities, individuals would underinvest in human capital since they would only be equating their privately appropriable gains with the marginal cost of training. The public sector should subsidize the investment in human capital to the extent of the external or public benefits. The argument is equally applicable to investments to replace human capital whose value has been diminished by changes in the structure of the economy.

Discrimination

If workers experience discrimination in labor markets due to age, sex, or race, they are likely to experience more prolonged periods of unemployment with higher factor income losses, and their reemployment is likely to be at a lower wage rate than in the absence of discrimination.

These considerations, information costs, capital market imperfections, externalities, and discrimination, can all impede the private market adjustment mechanism and prevent the rate and degree of adjustment which are desirable according to the criterion of economic efficiency. And public sector intervention should be considered on these grounds.

In addition, some would argue that the public sector should also be concerned with equity as it approaches the problem of economic adjustment. In the case of adjustment to pollution control requirements, adjustment costs are distributed among a relatively small group while the benefits of pollution control are presumably more widespread. It can be argued that public policy should be used to mitigate this asymmetrical distribution of costs and benefits.

The application of an equity criterion is difficult because of the variety of forms in which an equity criterion can be specified. At one extreme, for example, an analyst can assume that a grand social welfare function has been specified which gives welfare weights to the utilities or incomes of all individuals in the society. For example:

$$W = (U_1, U_2, \ldots, U_i, \ldots) \qquad (4)$$

where W = the aggregate social welfare

U_i = the utility level of individual i

Equity criteria of this form embody as necessary conditions for maximization of social welfare the efficiency conditions discussed above. If the efficiency conditions were not met, it would be possible to rearrange the resource allocation so as to increase the utility of at least one individual without decreasing the utility of any other individual. And if that can be done, social welfare is clearly not at a maximum. However, if there are additional constraints on either resource allocations or transfer payments, the second best social welfare maximum may involve violation of one or more of the marginal efficiency conditions (Freeman, 1967).

Since the social welfare function concept is basically an attempt to deal with the entire income distribution problem, its application to the small subset of problems associated with economic adjustment would be appropriate only if it could be assumed that the rest of the income distribution had already been adjusted in accordance with that criterion. Since this assumption seems unrealistic, it is appropriate to turn to more limited concepts of equity.

One possibility is adapted from the concept of horizontal equity, i.e., that likes should be treated alike. From this principle, one could infer that individuals in the same economic situation, e.g., same wealth, education, or level of pollution control benefits received, should bear approximately the same proportion of the total costs of pollution control. By this criterion it would be deemed inequitable if one household was assessed its costs in the form of a relatively small decrease in real income due to pollution control induced price increases while a similarly situated household bore a much larger cost in the form of unemployment or loss of capital values. By this conception of equity, one would look for means of sharing the costs of economic adjustment over the larger number of individuals in the economy as a whole. Equity in this sense might be achieved through the adoption of a social insurance principle in which the society as a whole would share the risk of major economic dislocations such as the implementation of a pollution control policy or substantial tariff cuts.

Many specific policy proposals in the realm of pollution con-

trol can be interpreted as embodying implicit equity criteria. Sometimes, these equity criteria, when made explicit, are revealed to embody rather extreme value judgments about equity. For example, arguments that pollution control standards should be relaxed rather than have any plants close or go out of business, imply value judgments in which the welfare of factors employed by these firms is always given greater weight than the weight attached to those who would benefit from pollution control. A similar point has been made concerning escape clauses and tariff policies (Murray and Egmand, 1970). The escape clause implies a lexicographic ordering with the welfare of factors employed in import competing industries being given first priority. In other words, only after the welfare of these factors has been fully protected, can the welfare function give positive weights to benefits distributed to others in the economic system.

We turn now to a discussion of the instruments of public policy for effecting economic adjustment. We assume the presence of an effective policy of full employment at the national level. A national full employment policy means that there will be some offsetting increases in expenditures in an impacted region in the natural course of events, facilitating adjustment within the region. Furthermore, there will be a wider range of alternatives for reemployment of resources outside of the region in a full employment context. The remaining discussion of policy instruments takes for granted the maintenance of national full employment. Of course, the essence of the adjustment problem is regional and sectoral uneveness in impact. And this is why policies directed specifically at these impacts may effectively complement the national full employment policy.

One category of instruments is direct public sector assistance to the adjustment process through subsidies and public expenditures on adjustment related activities.This category includes gathering and disseminating information on alternative employment opportunities, paying for all or part of the costs of job search and relocation of households in order to take new jobs, and various kinds of training, skill development, education, and other forms of investment in human capital. If there are market failures as discussed above, use of these instruments can be justified in terms of the efficiency criterion. In addition, if an equity objective is to be served by public policy, and there are constraints on the instruments for achieving equity, then the optimal solution may involve pushing these adjustment assistance activities beyond the efficiency point of marginal benefits equal to marginal cost (Freeman, 1967).

A second category of policy instruments is transfer payments to those who have lost factor income. The primary justification for such transfer payments for income maintenance is some form of equity objective. But there is also some justification for income maintenance on efficiency grounds, in that payments to income recipients directly affected by pollution control would enable them to maintain expenditure levels and would prevent multiplier repercussions and associated adjustment costs within the region. Also stipends paid to workers undergoing retraining and manpower development programs may be deemed essentially compensatory in nature, i.e., serving equity objectives. However, they may in practice also be necessary to insure that workers participate in and complete the programs. In that sense, transfer payments associated with retraining programs may facilitate workers' reemployment and full adjustment.

On the other hand, transfer payments, undertaken for equity reasons may affect incentives and resource allocation in a negative way as well. Transfer payments such as unemployment compensation reduce the incentive to seek speedy reemployment. The effect may be a larger factor income cost than would be the case without unemployment compensation.

In addition to real resource expenditures for adjustment assistance and transfer payments to individuals, public policy might also include fiscal assistance to state and local governments to mitigate the fiscal impacts of reductions in the tax base. Fiscal assistance could prevent adverse economic efficiency and equity consequences that might accompany forced changes in the structure of taxation by state and local governments strapped for revenues.

The final set of policy instruments is the application of more or less traditional Keynesian macro policies at the regional level. In macro terms, the problem arises from a decrease in exogenous expenditures. Policy induced offsetting increases in exogenous expenditures will facilitate the regional allocation of resources by providing new demands for resources and positive multiplier effects. For practical reasons, the regional macro policy must be limited to changes in public expenditure levels since regional changes in tax rates are impractical.

Included in this category are the traditional kinds of pump-priming public works projects as well as social overhead investments meant to change a region's productivity and growth rate. Also this category includes projects undertaken directly by the federal government as well as federal grants to help finance local government investment projects.

There are three sets of questions which must be answered satisfactorally before regionally targeted public expenditures or public works projects can be accepted as major entries in the list of policy instruments for adjustment problems. First, is the pattern of resource demands created by the public works project qualitatively and quantitatively matched to the pattern of excess supply of resources in the region? If the answer is negative, the project may create adjustment problems of its own without materially affecting the adjustment position of the impacted resources (Haveman and Krutilla, 1968).

Second, public works projects selected because of their regional impacts should be able to pass the standard benefit-cost test. To allow a project whose national efficiency benefits are less than its opportunity costs to be undertaken because it also contributes to a regional development or regional adjustment objective poses some particular problems. The problems of multiple objectives in general and regional development in particular as they pertain to benefit-cost analysis have been discussed elsewhere (Freeman and Haveman, 1970).

Third, can the proposed public works project be initiated in time to make a contribution to the regional adjustment problem? Public works projects traditionally have a long time lag from conception through planning, evaluation, authorization, appropriation, and finally, construction.

To summarize this discussion of policy alternatives, the economic efficiency criterion requires that resources be allocated so as to create the largest possible pie independent of its distribution. In terms of the adjustment cost problem, economic efficiency requires that public policy minimize the sum of mobility costs and lost factor income costs. Equity considerations are likely to play an important role in our discussion of policies with respect to the adjustment cost problem. But systematic application of the general equity criterion is hampered by the impossibility of specifying a generally acceptable social welfare function and the real world difficulties of analyzing the situation where maximizing the social welfare function requires changes in real resource allocation as well as transfers. Hence, although equity considerations must be borne in mind, and will influence our discussion of policy instruments, actual policy choices are likely to be made more on the basis of ad hoc equity considerations rather than on systematic and consistent application of a general equity criterion.

SECTION V

TRADE ADJUSTMENT ASSISTANCE

INTRODUCTION

In this section, the U.S. experience with trade adjustment assistance under the Trade Expansion Act of 1962 and the Automotive Products Trade Act of 1965 is described and reviewed. The parallels between the economic problems of adjusting to tariff cuts and to pollution control requirements are striking.

1. In both cases the necessity for adjustment is created by a governmentally imposed change in the rules of the game. In the case of a tariff reduction, the principal effect of the change is on the market for a domestic firm's output in that foreign produced substitutes or comparable goods have become cheaper and more readily available in domestic markets. On the other hand, for pollution control requirements, the effect of the change is to raise the costs of production for some domestic firms. But in each case, the effect is to place contractionary pressures on certain domestic economic activities and firms.

2. In both cases the government makes the change presumably because it feels that there are efficiency benefits which exceed the costs of the policy changes. In the case of tariff cuts, it is argued that there are gains from trade on net which exceed any costs of adjustment domestically. In the case of pollution control, the requirements are imposed because it is judged that the benefits of reduced pollution in the form of improved air and water quality exceed the resource costs (including adjustment costs) of controlling pollution.

3. In both cases, the perceived adjustment costs are often offered by affected parties as arguments against undertaking the change. In a democratic political system, the adjustment costs can become a barrier to arriving at political decisions to undertake changes, even though in aggregate, the benefits of the changes may outweigh the costs.

This would be true if those who would bear the cost are able to form an effective political coalition, e.g., through vote trading. This was definitely a consideration in the development of adjustment assistance policies in the Trade Expansion Act of 1962 and the Automotive Products Trade Act of 1965 (Murray and Egmand, 1970, and 1973; and Bale, 1973b).

4. In both cases, the impact of the changes of rules, is broadly similar within industrial categories. In the case of tariff cuts, this is because tariffs are imposed by product categories, and the effect of the reduction of a tariff rate on a particular category is generally to increase the importation of that product category in all domestic markets, thereby affecting all firms producing similar products. In the case of pollution control, it is the similarities in the technologies of residuals production and control which lead to broadly similar impacts within an industrial category.

5. Nevertheless, in both cases the actual impact will be different among firms because of differences in location, product differentiation, age and efficiency of productive facilities, etc.

6. In both cases, the effects of adjusting to these changes may be concentrated regionally. For example, a plant which is a major employer in a region may close; or an affected industry may be concentrated in one region.

These similarities between the adjustment problems of import competing industries and those affected by pollution control requirements suggest the possibility that policies developed in the first instance and lessons learned in their implementation might also be applicable in the second case. Section V is limited to a description and analysis of the trade adjustment assistance program. The major elements of the program are described. Then the program is evaluated in terms of the consequences of the eligibility criteria and the effectiveness of the assistance rendered, and possible program modifications are discussed.

UNITED STATES TRADE ADJUSTMENT ASSISTANCE POLICIES

Concern about the domestic economic impact of tariff reductions has been reflected in U.S. trade legislation since 1951.* The "escape clause" of the Reciprocal Trade Agreements Extension Act of 1951 provided that when it was found that "tariff reductions or trade concessions resulted in in-

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*This section draws upon the enlightening discussion of adjustment assistance in trade policy in Murray and Egmand (1970)

creased quantities of imports, either actual or relative, which were causing or threatening to cause serious injury to the domestic industry producing like or directly competitive products" the President could restore the tariff, impose quotas, or take other steps to prevent the actual or threatened impact on domestic industry. The effect of this provision was to raise the objective of domestic employment and factor incomes to a superior level in the hierarchy of social and economic objectives, above the objectives of overall economic efficiency as embodied in the gains from freer trade. An analogous situation would result in the field of pollution control policy if legislation specified that the President could suspend pollution control requirements such as effluent and emission standards whenever he found that their implementation would adversely affect domestic employment and income.

A major change in the trade policy occurred in 1962. The escape clause provisions of the Trade Expansion Act of 1962 provided considerable discretion for policy makers engaged in weighing the employment and efficiency consequences of tariff reductions. The discretion was gained by adding a policy alternative to the all-or-none choice of allowing tariff reductions with its attendant employment impact, versus foregoing the gains from trade by eliminating the tariff concessions. While continuing the President's power to eliminate tariff concessions, the Trade Expansion Act of 1962 (TEA) provides for adjustment assistance to firms and to workers injured by the increased imports. While the primary purpose of the Trade Expansion Act of 1962 was to provide to the President specific and limited power to negotiate reciprocal tariff reductions during the period 1963-68, the escape clause and adjustment assistance provisions were made a permanent part of trade legislation.

Under the terms of this act, assistance is provided to workers in the form of allowances to supplement and extend unemployment compensation, access to counseling, job referral, and testing programs offered by the U.S. Employment Service, opportunities for participation in Manpower Development and Training programs, and assistance in and allowances for relocating the worker and family to take work in another locality. Adjustment assistance for firms can take three forms: technical assistance provided by the Department of Commerce, financial assistance in the form of low interest loans, and more favorable tax loss carry back provisions for determining corporate income tax liabilities.

In separate legislation, specific provisions for adjustment assistance during a limited period of time were made part of the legislation implementing the Canadian-American Automotive

Trade Agreement of 1965. This agreement eliminated all trade restrictions on automobiles and automotive parts between the U.S. and Canada. The Automotive Parts Trade Act of 1965 called for certain forms of adjustment assistance to be provided during the three year adjustment period ending in 1968.

In evaluating the U.S. experience with adjustment assistance in trade and in considering the applicability of adjustment assistance concepts to pollution control problems, there are three areas to be discussed. They are: the underlying objectives and rationale for the program; the criteria for determining eligibility; and the form and effectiveness of the assistance provided. We take each of these up in turn.

Program Objectives

Legislation establishing new programs normally includes a section with a statement of purpose. However, the purposes are rarely stated in a form which articulates objectives which are consistent with economists' framework of efficiency and benefit-cost criteria. Statements of purpose and objectives contained in legislation and policy makers' statements are typically of the "greatest good for the greatest number" type. In other words, they are phrased as if there were no necessity for trade-offs among program elements in implementing a rational program. Decision makers at the implementation level who do face the necessity for making these trade-offs must somehow infer or make assumptions about the underlying objectives, from the often purposely vague enabling legislation.

The underlying objectives in the Trade Expansion Act were not clearly specified in the legislative language. Two possibilities have been suggested in a recent exchange in the economics literature. Murray and Egmand suggest that the underlying goal of TEA is to "reconcile the conflict between increased imports (and a more efficient allocation of world resources) and full employment (Murray and Egmand, 1970, p. 404)." This is essentially an efficiency objective. Bale, on the other hand, suggests that the underlying rationale for adjustment assistance is to provide compensation to firms and workers where injury is caused by some governmental policy, such as a change in the rules governing imports (Bale, 1973b). For our purposes, it is not important to cite the evidence the two authors offer in support of their own interpretation of the legislative intent. Rather, what is of interest is the implications of the alternative interpretations for decisions about program design. As will be shown, the alternative objectives would lead to different decisions about the scope of the program, eligibility criteria, and form of aid.

If it is judged that it is equity considerations which justify some form of compensation to those injured by an increase in imports stemming from a change in government policy, this has implications for the scope of the government's responsibility for adjustment assistance. If the government accepts the responsibility for compensation in the case of tariff reductions, there seems to be no reason not to extend that responsibility to other injuries caused by changes in other government programs and policies, such as defense spending or pollution control.

Murray and Egmand argue that since the law requires that firms submit adjustment plans before receiving assistance, considerations other than equity and compensation are important in overall program objectives. They argue that the primary objective is to reconcile the conflict between increased imports (representing overall economic efficiency) and maintaining full employment of domestic resources. Thus they argue that this objective necessarily limits the scope of adjustment assistance to trade related adjustment problems. They also argue that the program should not be limited to adjustment problems caused by tariff reductions alone, but should be expanded to cover all cases where imports have increased for whatever cause.

But if reconciliation of a conflict between the efficiency benefits of free trade and the benefits of full employment is a program objective, there appears to be no logical reason to restrict this notion to the realm of trade. The arguments suggest that whenever the economy is moving toward a more efficient allocation of resources, social welfare is served by attempting to mitigate temporary effects or, in the terminology of Section IV, to minimize the economic costs of adjustment. If this argument is accepted, then adjustment assistance should be made available in such cases as adjustment to pollution control requirements, adjustment to changes in the pattern of defense spending, or (to use an historical case) contraction in the agricultural sector.

An adjustment assistance program must include regulations establishing the criteria for eligibility for assistance. These criteria define when injury has occurred; and they show which cases of injury are in some way related to the overall program objectives. Murray and Egmand argue that since the program objective is to reconcile the efficiency benefits of free trade with full employment, it should only be necessary to show that the injury is due to an increase in imports. However, Bale argues that if compensation for government imposed injury is the underlying program objective, it is logically necessary to establish that the in-

crease in imports is due to government action, i.e., tariff concessions.

Concerning the form of assistance, if compensation is the underlying objective, then lump sum payments or transfers of resources to the injured parties are sufficient to meet project objectives. On the other hand, if reconciling economic efficiency and full employment criteria is the underlying objective, then it is necessary that the assistance payments in some way facilitate the rapid reemployment of resources. In other words, they must either directly facilitate reemployment (e.g., relocation allowances) or be directly tied to or contingent upon private actions which will help to restore resources to full employment (e.g., payments to individuals for undertaking retraining). It is also possible to have some form of a combined efficiency and equity goal, in which case the optimal program would combine some form of pure grants and transfers, contingent transfers, and real resource expenditure on the part of the government.

The purpose of this section has not been to specify what the appropriate program objectives should be. This is essentially a political decision. Rather, our purpose has been to show that there is a variety of possible forms of program objectives and that the way in which program objectives are articulated help to dictate (or determine) the form of the program. We will return to these points in Section VI when the design of an adjustment assistance program for pollution control is discussed.

Eligibility Criteria

There are two stages in the determination of eligibility for adjustment assistance. The first requires a determination of whether a particular industry-economic situation warrants adjustment assistance. This will be called case eligibility. The second is a determination of which parties involved in that situation warrant assistance and what form the assistance should take. This will be called party eligibility.

In the case of trade adjustment the responsibility for determining case eligibility lies with the U.S. Tariff Commission. Under the escape clause of TEA, firms, groups of workers, or their representatives may petition for a determination of case eligibility for adjustment assistance. Also under the escape clause of TEA a firm, union, or trade association may petition for a finding of eligibility for the elimination of the injury causing tariff concessions. In order to arrive at an affirmative finding for case eligibility, the Tariff Commission must determine that four nec-

essary conditions are met. These are:

1. that imports of goods that are like or directly competitive with those produced by the applicant are increasing;

2. that increases in imports must be in major part the result of tariff concessions granted to other nations under trade agreements;

3. that serious injury to firms or to the industry must be present or threatened or there must be unemployment or underemployment of workers either present or threatened; and

4. that the increased imports of conditions 1 and 2 must be the major factor in causing the present or threatened serious injury or unemployment of Condition 3.

There are major problems of interpretation in each of these four conditions. The problem in the first condition is to determine what imported goods are like or directly competitive with domestically produced goods. This condition can be given economic meaning by being restated in terms of cross elasticities of demand or elasticities of substitution (Bale, 1973a, pp. 58-60). However, this condition is of little relevance to the pollution control problem and will not be discussed further here.

In the second condition, the problem is one of separating the effects of changing trade conditions from all of the other factors which influence the quantity of imports, e.g., changes in the prices of substitutes, changes in income levels, exchange rate movements, differential rates of inflation, and psychological changes, and of determining the relative importance of tariff concessions in causing increased imports. Although determining the causes of changes in imports of specific goods is an empirical problem specific to international trade, this condition for receiving assistance illustrates the type of problem which arises when any aid is offered only for damages from particular causes. The requirement to establish causation as a condition of eligibility may erect a substantial barrier to obtaining assistance

The third problem concerns the determination of when injury and unemployment is "serious." In considering whether injury is serious, the Commission is required by TEA to consider all relevant economic factors, including capacity, product levels, and degree of unemployment of labor. The Commission has interpreted serious injury to mean "an important, crippling, or mortal injury; having permanent or last-

ing consequences. Such injuries are distinguished from the less important and temporary injuries which domestic concerns are expected to absorb without governmental assistance (quoted in Bale, 1973a, p. 77)."

Given that serious injury has been found, the Tariff Commission must find not only that there is a causal link between increased imports and injury but also that increased imports is "the major factor" causing the injury. Also, there are the empirical problems of sorting out and measuring the relative contribution of imports to injury and the legalistic questions of whether the measured contribution satisfies the criterion of "major." In general, the Tariff Commission has tended to define major factor as that one factor out of several which would not only exert the greatest influence but also dominate the overall result. In other words, not only must this factor be the most important in a ranking of several causal factors, but it must be deemed more important than all other factors combined (Murray and Egmand, 1970, pp. 414 and 419; Bale, 1973a, pp. 63-77).

After considering the four conditions listed above, the Tariff Commission must report its findings to the President. If the Commission finding is negative on any condition, or if the Commission is evenly divided, the President is not required to take any action. However, if the Tariff Commission finding is affirmative on all points, the President must either certify the cases eligible for assistance, or within sixty days submit his reasons for not doing so to the Congress. If the finding is affirmative, or the President chooses to act, he passes the case on to the Secretary of Commerce where adjustment assistance for firms is requested or to the Secretary of Labor where assistance for workers is requested.

The Secretary of Commerce than takes up the matter of party eligibility. The Secretary must determine that the firm applying for assistance is, in fact, one of those whose injury was certified by the Tariff Commission. The final hurdle for the firm is the submission and approval of a plan for adjustment. The Secretary of Commerce is required to evaluate the firm's adjustment proposal to insure that it complies with statutory requirements of (1) materially contributing to the economic adjustment of the firm, (2) giving adequate consideration to the interests of the firm's workers, and (3) demonstrating that the firm is using its own resources in the adjustment effort. If the proposal includes a request for financial assistance, it must be confirmed that (1) such assistance is not otherwise available on ressonable terms from private sources, and (2) there is a reasonable assurance of the firm's ability to repay the loan

(Bureau of Domestic Commerce, 1971).

The conditions for party eligibility for workers are as follows. Once a case has been certified as eligible for adjustment assistance, individual workers may receive a full range of adjustment assistance benefits, if they are determined to have been a part of the labor group found to be injured and to have become unemployed or underemployed because of lack of work in the affected firm. The worker must have been gainfully employed for at least half of the three year period preceeding his unemployment. Furthermore, he must have been employed in the adversely affected firm for at least half of the 52 weeks immediately prior to his layoff. Thus, as can be seen, some unemployed workers may not be eligible for assistance if their employment experience was limited in the preceeding three years, or they were only recently employed by the injured firm (Department of Labor, 1971).

Assistance Programs

Assistance to certified firms can take any or all of the following three forms: technical assistance, financial assistance and tax relief (Bureau of Domestic Commerce, 1971). In addition, TEA requires the Secretary of Commerce to make the maximum possible use of existing government agencies and programs such as those administered by the Economic Development Administration and the Small Business Administration.

Technical Assistance takes the form of advice from the various technical bureaus of the Department of Commerce and the services of outside consultants, in an effort to assist firms in developing new products, finding new markets for existing products, adopting newer technologies and methods of production, or developing improved managerial techniques. The aim is to reestablish profitable operations for the firm, making maximum possible use of existing talent, expertise, and assets of the firm, but redirecting them away from previous uses into potentially more rewarding uses.

Financial assistance takes the form of loans to firms to purchase land, plant and equipment, buildings, and perhaps working capital. The loans may be either direct from the Federal Government, or be made in cooperation with commercial banks and other lenders. The law places no limit on the size of the loans. However, terms are limited to a maximum of twenty-five years. The need, form, and extent of financial assistance from the government, the terms of any loan or guarantee and the conformity of the firms adjustment proposal with legal requirements are determined by the Commerce Department and the Small Business Administration or

other appropriate agencies. The applicable interest rate on loans is determined by the Treasury Department; for fiscal year 1971, the interest rate on direct loans was between 7.25 and 7.875 per cent depending on the maturity.

Tax assistance in the form of a new operating loss carryback over a five year period may be provided when the Secretary of Commerce determines that such tax assistance will materially contribute to the economic adjustment of the firm. By reducing tax liabilities or providing for tax refunds, this form of tax assistance can increase the availability of working capital to affected firms.

Workers are eligible for four types of adjustment assistance: (1) readjustment allowances (TRA); (2) the counseling, job referral and testing services of the U.S. Employment Service; (3) Manpower Training programs; and, (4) relocation assistance (Department of Labor, 1971). TRAs serve as an extended and enhanced replacement for conventional unemployment insurance benefits. Weekly allowances are set at sixty-five per cent of the worker's previous average weekly wage. However, there is an upper limit in that benefits cannot exceed sixty-five per cent of the average weekly wage in manufacturing. Readjustment allowances are payable for fifty-two weeks. In addition, they may be extended for up to twenty-six additional weeks to permit workers to complete training programs. The fifty-two weeks of TRA payments need not be consecutive. For example, if a worker found temporary employment within his period of eligibility, the payments would stop during the period of employment but would begin when he became unemployed again. If the worker had reached his sixtieth birthday prior to his original layoff, he is automatically eligible for sixty-five weeks of benefits. However, no worker may receive more than seventy-eight weeks of benefits.

Once a worker establishes his eligibility for TRAs he will continue to draw these allowances as an alternative to unemployment insurance until the full fifty-two weeks of benefits are used up or expire. This can take up to five or six years. If the worker has drawn unemployment insurance and is later found eligible for TRAs, the state is reimbursed for the funds actually paid out and the worker gets the difference between the unemployment insurance and the TRA in a lump sum retroactive payment. The individual cannot draw both TRAs and unemployment insurance for the same period. The TRAs are entirely from federal funds so that the employer's experience rating is not affected by these payments.

The adjustment assistance act provides that efforts will be made to return affected workers to full employment through

whatever testing, counseling, and placement services are available under federal law.

Affected workers also have full access to whatever federally operated training programs are available in his area. If training centers are not within commuting distance of the worker's residence, he may be paid ten cents per mile, plus subsistence expenses of up to five dollars a day. Workers are encouraged to undertake training by the provision of additional TRA benefits for up to twenty-six weeks. In addition to this carrot, there is also a stick in the form of the condition that displaced workers must make acceptable progress in training if appropriate training is offered, or have their TRAs terminated.

If a worker is a head of family, if there is no suitable job for him in his own locale, and there is a suitable job in another city, he may receive payment for the full moving expenses for himself and family plus a cash payment equal to two and one-half times the average weekly manufacturing wage. No worker can be compelled to move. Refusal to move is not like refusal to accept appropriate training and cannot be a reason for losing eligibility for any other form of assistance.*

While this review of adjustment assistance policies has focussed on the U.S. program, it is interesting to note the degree to which adjustment assistance has become a working part of economic policy in other industrialized nations. As Bale says,

> Accelerated retraining programs for adults are found in various forms in virtually all western countries . . . Relocation assistance is another adjustment mechanism that is used extensively throughout industrial countries. The United States, in fact, is the only major industrial country without a national labor mobility program (with the exception of experimental projects under the Manpower Development and Training Act (Bale, 1973a, pp. 14-15).

In most of the countries reviewed by Bale, the programs were not limited to adjustment problems specifically related to international trade. Rather the programs appear to be attempts to improve the overall performance of labor markets

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*For further descriptions of relocation programs in this country and elsewhere, see Schnitzer (1970), and Freedman (1968).

(Bale, 1973a, p. 13-32). For additional studies of manpower and adjustment programs in other countries, see (Reubens, 1970; Matthews, 1971; and Schnitzer, 1970).

EVALUATION OF U.S. TRADE ADJUSTMENT ASSISTANCE

In this section we review the descriptive and analytical data available on the impact and possible effectiveness of the U.S. trade adjustment assistance program and consider a number of recommendations for changes in the program. The purpose of this section is not to arrive at some optimal policy for trade adjustment assistance, but rather to use the discussion to highlight the major issues and to illuminate the range of policy choice that may be appropriate for pollution problems.

The Case Eligibility Criteria

If the purpose of TEA is to facilitate the adjustment process through public policy steps, the requirements for case eligibility are apparently too strict. This is because few applicants have been successful in obtaining affirmative findings in all four of the criteria which must be considered by the Tariff Commission. Although the first case under TEA was heard at the Tariff Commission in July 1962, the Tariff Commission did not render a favorable decision until November, 1969. As of May 1971, the Commission had made affirmative findings in only sixteen out of 131 cases heard (Bale, 1973a, p. 45).

In each of the areas reviewed below, the principal problems appear to have revolved around the necessity for showing that tariffs were the major cause of increased imports and the increased imports were the major cause of injury. Recall that "major" has been interpreted as meaning that that cause dominated all others or was more important than all other possible causes combined. This experience has led to the suggestion that the purposes of TEA would be better served by less stringent requirements. Three alternative wordings have been proposed:

1. "The primary cause." This would require that the trade related factors be larger than any other single factor but not necessarily larger than the combined effect of other factors;

2. "A substantial cause." This has been interpreted as no less than any other factor (Reifman, 1974, p. 20);

3. "An important cause." This terminology would only require that the factor in question make a clearly identifi-

able contribution to the effect being analyzed.

The effect of adopting either of these terminologies would be to make adjustment assistance available in more cases. In addition, it would have the effect of speeding up the application process, and reducing the information requirements for the Tariff Commission, both of which would be benefits in and of themselves.

The second major difficulty in the establishment of case eligibility is the time span involved. Because of the requirements for data and information, and because of the lengthy administrative procedures required, the delay between economic impact and final certification has been such as to make the adjustment part of adjustment assistance relatively meaningless. Fooks estimates that in the first twenty-nine cases certified by the Secretary of Labor, the elapsed time between the impact data and the certification averaged 16 months and ranged from two and one half months to thirty-nine months (Fooks, 1971). If a worker must wait for sixteen months for certification, he will have already exhausted his unemployment benefits and been without any form of transfer income for as much as nine months. If found eligible, he then receives a lump sum, retroactive payment of the additional TRA; it is clear that both the financial costs of the program and the real costs of adjustment borne by workers could be reduced by a more speedy delivery of the financial and employment market benefits of adjustment assistance.

The experience of adjustment assistance of the Automotive Products Trade Act provides an interesting contrast to the experience under TEA. There are two major differences in the criteria and the procedures for establishing eligibility under APTA. The first is that the Tariff Commission serves only as a fact finding body under APTA. The responsibility for determining eligibility was given to the President, who in turn delegated it to a Board consisting of Secretaries of Commerce, Labor, and Treasury. The second was that increased imports were required only to be shown to be the "primary cause" of injury. Furthermore, it was necessary only to show that increased imports resulted from the operation of the agreement.

In the period between October 1965 when the act became effective and June 30, 1968 when these provisions expired, there were 21 petitions filed. The Board approved 14 of these 21 petitions. Also, in the case of APTA, the petitioning process took between 70 and 105 days. The different criteria and certification procedures had the effect of reducing the time between the date of adverse impact and ac-

tual certification to an average of about 5 months compared with 16 months under TEA procedures (Fooks, 1971, p. 352).

Party Eligibility

The major criticism of the party eligibility requirements concerns the requirement for employment experience on the part of workers. Recall that the worker must have been gainfully employed for at least half of the three years preceeding the impact date and employed at the affected firm for at least half of the immediately preceeding fifty-two weeks. These party eligibility requirements discriminate against new labor force participants. Those workers with the least protection through seniority, with the fewest benefits established in other ways (e.g., union or pension benefits and unemployment entitlements) and who for other reasons have had bad labor market histories, also are excluded from adjustment assistance under TEA.

Fooks suggests that the present labor force attachment and earnings criteria be liberalized and simplified. He would permit anyone who has worked regularly in and was separated from an adversely affected employer be eligible for adjustment assistance benefits (Fooks, 1971). Legislation presently under consideration would grant eligibility to any worker who had been employed for half of the year immediately preceeding his dislocation at wages of at least $30 per week (Reifman, 1974).

It should be noted that under the present formula for calculating TRA's, a low previous wage experience would result in relatively low TRA benefits for an eligible worker, but he would still be eligible in full for relocation allowances, retraining, and job counseling and placement. These latter benefits may be most important in the successful adjustment of such workers. There seems to be no justification in equity or efficiency for denying the non-monetary forms of adjustment aid to workers who do not meet the present party eligibility requirements in terms of wages or labor force attachment.

There are others in addition to impacted firms and laid off workers who are adversely affected by trade concessions, and who, therefore, might be considered eligible for adjustment assistance. First, it may be desirable to make it possible for firms and workers who are linked through input or output relationships to import-competing firms to apply for adjustment assistance under certain circumstances.

Second, municipal tax bases may be substantially eroded if local firms close down as a consequence of adjusting to in-

creased imports. In this case, in order to provide assistance, it is necessary both to develop new criteria for eligibility and new forms of adjustment assistance or aid. If a firm or workers were certified to be eligible in accordance with whatever case eligibility rules were in effect, communities should be able to be certified as eligible for community assistance as well. The criterion for injury could be expressed in terms of percentage change in property tax base. Aid could take the form of fiscal grants to replace lost tax revenues for some period of time, and could also be expanded to include advice and technical assistance, to enable eligible communities to restore, redevelop and diversify their economic base.

In connection with the Trade Reform Bill, Senator William Hathaway has proposed a program which:

> . . . would allow a community or groups of communities comprising a single labor area to be certified for assistance. . . . Once such a certification is made, the Secretary would send a task force to the area to meet with local officials and citizens to acquaint them with the forms of assistance available to them and to help them establish a local council to run a realistic and aggressive economic development program . . . the Secretary is authorized to provide funds to the Council to help defray the cost of a small staff . . . After the Council and the full time staff is in place, then they can develop a plan for their area and apply for grants and loans for public improvements conducive to attracting new industry. The Secretary would also be authorized to provide whatever technical assistance may be necessary to the local council in preparing and executing an economic development plan (Hathaway, 1974).

Forms of Assistance

In this section we review the very limited evidence on the effectiveness or impact of adjustment assistance provisions in facilitating economic adjustment. We also ask how might adjustment assistance programs be changed to make them more effective in delivering assistance. Since it well illustrates the methodological and empirical difficulties in program evaluation, we consider first assistance to workers.

Aid to Workers - There are two ways in which one can attempt to quantify and measure the impact of adjustment assistance programs on workers. The first is to look at the financial

aspects of the program. For example, one could measure total expenditures or expenditures per eligible worker. These data may give a misleading picture since they include administrative expenditures, and treat expenditures for training and relocation equally with benefits paid directly to workers. One would also be interested in, or would want to look at, total TRA benefits and TRA payments per worker. Recent data are not available for TRA benefits per worker, but in July 1971, the Department of Labor estimated that the average duration of TRA benefits would be about twenty-eight weeks with average TRA payments of $2400 per worker (Department of Labor, 1971).

This way of looking at the assistance program emphasizes the compensation and income maintenance aspects of the program. It does not provide any information on the success of the program in facilitating adjustment and reemployment of idle resources, nor does it permit an ass sment of the cost-effectiveness of the different dimen ons of the assistance program, e.g. relocation, training, c.

The second way of looking at the program is to ask how successful it has been in facilitating reemployment and adjustment. This is an extraordinarily difficult question to answer properly because it entails a comparison of the actual experience with the program, and the experience that would have occured in the absence of the program. This latter alternative can never be observed and measured directly. A major part of the practice of social science research involves finding ways to get around this problem. For a further discussion of these points, see (Bale, 1973a, pp. 116-126; Borus and Task, 1970; and Cain, 1972).

Generally speaking there are two approaches within the social science disciplines. The first is to approximate the ideal of the controlled laboratory experiment through the identification of two groups, the experimental group and the control group. In the context of evaluating adjustment assistance programs, one group would be displaced workers who receive adjustment assistance benefits, and the control group would be a similar group of displaced workers who, although eligible, were not given adjustment assistance. This methodology is difficult at best, because it is time consuming and very expensive, and because it is in principle impossible to verify that the two groups are identical in all significant and important aspects except for the presence of the experimental variables, i.e., adjustment assistance. Some controlled experiments of this sort have been conducted in the area of education and manpower training. But no such experiments have been performed regarding adjustment assistance.

The other alternative is to collect data from a sufficiently large and varied sample so that the relevant variables thought to influence the outcome can be measured and their variation controlled for through statistical techniques such as analysis of variance and multiple regression. A major difficulty is that there are seldom adequate measurements of all important variables, thus preventing their control. Also it is difficult to develop statistical models which adequately reflect the dynamics of the experimental process. For example, worker motivation and skill may be important variables in determining the speed and nature of a worker's adjustment to an economic impact such as a layoff. Both of these variables may be correlated with income or with education. But the correlation will not be perfect. Controlling for income levels or education is not the same thing as controlling for motivation and skill. Hence, experimental results will be biased.

The dynamics of the social process are important also. For example, one would hypothesize that being offered job counseling and the services of a placement office would increase the probability of reemployment of a displaced worker and decrease the duration of unemployment. However, Bale found that workers receiving these services tended to have a longer duration of unemployment and lower wages upon reemployment than workers not receiving these services (1973a). The answer to this paradox probably lies in the dynamics of the job search and reemployment process. Suppose that upon displacement, all workers initially attempt to find new employment on their own. It seems reasonable to expect that the better motivated and more skilled workers will be more successful in finding employment at this stage. Those workers who attempt to obtain counseling and placement services, then, are likely to be those who were not successful in the first round of job search. Hence, counseling and placement services provided to the relatively less skillful and successful group will have less impact on the dependent variables -- wages and duration of unemployment.

Now, if motivation and educational attainment were perfectly correlated, controlling for education would eliminate this source of bias in the statistical measurement. But to the extent that education and motivation are not perfectly correlated, the statistical results will be biased by a sort of "creaming" process. While it may be true that the placement and counseling services resulted in a duration of unemployment lower than what it would have been otherwise for <u>that group</u> and perhaps resulted in higher wages for <u>that group</u> than would have been otherwise, the statistical results can't measure that. All the statistics tell us is that in comparison with a group which did not receive these services,

but may have been different in other unknown ways, the group which did receive these services had lower wages and higher duration of unemployment.

This digression into some of the methodological problems of research into the effectiveness of human resources programs, has been necessary to make it clear why we can say so little about the effectiveness of programs such as adjustment assistance. These are large and important questions, and there are only inadequate data and statistical tools for answering them. Nevertheless, some progress has been made and information gathered. An example is the study by Bale referred to above (1973a).

Bale's study is based upon a sample survey conducted in February of 1972 of ten per cent of the estimated 4,700 workers who had been displaced and who had petitioned the Tariff Commission for adjustment assistance. First it must be pointed out that this study can shed almost no light at all on the questions of most interest. That is -- did the availability of adjustment assistance make adjustment any speedier, any more effective, any more successful or any less costly in real resource terms than it would have been in the absence of assistance? This question cannot be answered because the original survey sample and the survey questionnaire were not designed with this question explicitly in mind.

Some of the more significant and reliable findings from Bale's analysis of this survey data are:

1. The group of workers displaced by import competition appears to be characterized by lower educational attainment and lower occupational skill levels than the labor force as a whole.

2. There was a very high rate of unemployment among this sample at the time of the survey -- 44%.

3. Those workers who were employed at the time of the survey had a lower mean wage than the mean pre-displacement wage rate for the sample as a whole.

4. Although 86% of the sample was eligible for the receipt of TRA's, only 63% had applied for TRA's.

5. The mean total delay between displacement and final receipt of benefits was 55 weeks for the sample. The mean time lapse for gaining certification of eligibility was 33 weeks; fifteen weeks elapsed on average between certification and application by workers for benefits.

6. Men have a better unemployment experience and higher wages on reemployment than women.

7. Age has a strong effect on the wage and unemployment experience of the sample. To a point, older workers have higher wages on reemployment, a more favorable wage change to the new wage level, and better unemployment experience. But beyond a certain level, about 55 years of age, in the case of absolute wage levels, age affects all variables adversely.

These empirical results from Bale do not offer any major new insights into how to reform the assistance programs in the interest of greater efficiency and equity. However, some of Bale's findings tend to confirm or support suggestions which have already been made by others. See for example Baldwin and Mutti (1973), and the recommendations discussed below.

Adjustment assistance for workers takes the form of access to the wide range of manpower assistance and development programs administered by the U.S. Department of Labor. The sample of workers studied by Bale consisted only of displaced workers, who had applied for trade adjustment assistance to the Tariff Commission. It would also be possible to gain some insight on the potential of adjustment assistance by evaluating the effectiveness of those manpower programs themselves. However, care must be taken in drawing conclusions because trade impacted workers have constituted only a small subset of all workers participating in these programs. These workers may be different in important respects from the average participants in the programs administered by the Department of Labor; and results derived for the average participant may not be valid for trade impacted workers.

What follows is a short, selective review of the literature on the evaluation of manpower and retraining programs. Most of the studies cited below refer to other works which a careful student of the problem should consult. Also these studies include discussions of the methodological and empirical problems and limitations underlying their work and their results. These discussions are not summarized here.

Somers has analyzed several labor relocation pilot projects undertaken in Michigan and Wisconsin (1972). His carefully qualified conclusion is that benefits in terms of earnings gains are substantially larger than the real resource cost of the programs. He says:

> A program of governmental relocation assistance payments can serve to overcome obstacles to mo-

> bility among many unemployed and underemployed workers in relatively depressed economic areas . . . a subsidized relocation program is a sound social investment . . . [but] . . . relocation policies should be viewed as only one program in a battery of manpower policies (Somers, 1972, pp. 103-105).

Hardin and Borus have evaluated the costs and benefits of Manpower Development and Training Act retraining programs from several perspectives, including that of economic efficiency (1971). See also Cain (1972). Hardin and Borus found generally favorable benefit-cost ratios for retraining. Their analysis also permitted them to make some interesting recommendations on program design, especially concerning the length of the retraining program. Barsby studied vocational education, both secondary school and post secondary (1972). He also found benefits generally exceeding costs.

Finally, Goldstein has reviewed a number of manpower programs, including the Neighborhood Youth Corps, Job Corps, Work Incentive Program (WIN) and Job Opportunities in the Business Sector (JOBS) (1972). His paper includes a review of the methodological and empirical problems involved in evaluating the programs listed. He finds that problems of data and method severely hamper his ability to make general statements about results. He states: "Although some of the research results suggest that the gains in earnings have been large relative to costs, they have not been large by conventional social standards (1972, p. 14)." Furthermore, results vary substantially among programs.

We turn now to a review and summary of a number of suggestions for reform of adjustment assistance to workers:

1. There have been a number of proposals to increase the TRA benefits. For example, pending legislation would increase the TRA payment to 70% of the worker's average weekly wage for the first 26 weeks (Reifman, 1974, p. 37). In the absence of any information that higher TRA benefits facilitate adjustment and reemployment, this proposal cannot be justified on efficiency grounds. While the proposal may be justifiable on equity grounds, it must be pointed out that the closer the TRA benefits approaches the opportunity wage, the weaker the incentive to seek reemployment. Conceivably a TRA program could become so generous as to defeat the purpose of minimizing aggregate adjustment costs (Feldstein, 1973). One reform proposal attempts to deal with tnis problem by reducing the TRA allowance after the first 26 weeks (Reifman, 1974, p. 37).

2. A number of specific proposals for administrative and organizational changes focus on improving the delivery of benefits, the speed of certification, and the range and quality of specific employment, counseling, placement, and training services provided (Fooks, 1971).

3. Often workers lose far more than current wages when they become unemployed. They may lose group health, accident, and life insurance programs, and other forms of fringe benefits, as well as continued contributions toward pension and retirement. Adjustment assistance benefits should be tailored either to allow the continued participation in "essential" fringes such as insurance programs, or provide some form of lump sum compensation for the loss of fringe benefits.

4. The problems of the older worker deserve more careful attention in designing a package of benefits. Losses of seniority are themselves economically important, and perhaps should be compensated for. Both a priori reasoning and what limited evidence we have support the contention that older workers will find it more difficult to successfully maneuver the adjustment process. The additional TRA benefits for workers over 60 should be made more generous and the minimum age level should be dropped at least to fifty-five. In addition, more comprehensive retirement options for workers fifty-five and over should be made available.

Aid to Firms - Turning to assistance for firms, Bale reports that as of December 1972, only ten firms had actually received assistance or been authorized to receive assistance The total assistance authorized was $18.6 million including $14.3 million in financial assistance, $3.8 million in tax funds, and $0.5 million in technical assistance (Bale, 1973a, p. 182). Bale interviewed the chief officers of twelve firms, two of which were still in the process of obtaining certification. No systematic data were obtained and only descriptive statistics and subjective impressions were reported.

It was reported that the delay between initial application to the Tariff Commission and the final receipt of adjustment assistance was a major barrier to more effective utilization of the adjustment assistance program. Thus if the procedures for determining case eligibility were streamlined as suggested above, and if the Department of Commerce were quick in reviewing adjustment proposals submitted by certified firms, the time lag in delivering assistance could be substantially shortened.

Finally, Bale offers this tentative conclusion, "Evidence on firm adjustment assistance is insufficient for a thorough evaluation to be made. To date, firms appear to have suc-

cessfully 'adjusted' with the exception of one firm. It appears that giving assistance to firms is a cheaper, more effective, and less disruptive way of assisting workers than by giving them direct assistance via the Department of Labor (Bale, 1973a, pp. 189-190)." This is an interesting, even provocative, conclusion. But as Bale readily concedes, there is little hard evidence to support it. Perhaps it should be offered as an interesting research hypothesis rather than as a conclusion.

There are at least three reasons why such comparative conclusions cannot be taken too seriously. First, the comparison is with the present assistance programs for workers, which have been poorly implemented and have major limitations. The comparison might turn out differently if it is made with an effective, smoothly functioning assistance program. Secondly, we have very little idea of cost effectiveness of present adjustment assistance programs for workers, let alone how that cost effectiveness would be affected by some of the reforms suggested above. And finally, we have no reliable information on the cost effectiveness of adjustment assistance to firms. The relevant question is how would the employment experience of these firms have been different in the absence of adjustment assistance? Without carefully controlled experimentation and/or rigorous statistical analysis with data from a large sample, we simply have inadequate information to make a judgment on that question.

SECTION VI

ADJUSTMENT ASSISTANCE FOR POLLUTION CONTROL

DO WE NEED AN ADJUSTMENT ASSISTANCE PROGRAM?

Whether an adjustment assistance program for pollution control should be adopted is ultimately a political question. This is true both in the sense that it is the kind of question which can only be answered in a political arena and not by economic research, and in the sense that the problem is already part of the political debate concerning pollution control and will continue to be so.

That the economic impact of pollution control requirements is a real political issue should be well understood by policy makers and political leaders. Evidence of this political concern and of the political power of the issue can be seen from perusing the Muskie sub-committee hearings on this matter (U.S. Senate, 1971). It should be clear from recent developments that the issue is not going to disappear. The Clean Water Amendments of 1972 represent a quantum jump in the stringency of water pollution control requirements over the next decade. Although a federal study in 1972 concluded that the numbers of plant closings and job losses directly attributable to pollution control would be small, these projections did not take into account the higher standards embodied in the 1972 amendments (Council on Environmental Quality, 1972). Even without estimates of magnitude of the impacts of higher standards, we can predict rising concern over these impacts, and we can expect that concern to be fanned and fueled by major polluters.

Introducing the notion of adjustment assistance into the mainstream of political discussion would appear to be helpful in maintaining a rational political discussion of the pollution control problem. The accounts of the passage of the Trade Expansion Act of 1962 and the approval of the Canadian-American Automotive Trade Agreement of 1965 emphasize the key role that the adjustment assistance provisions of these acts played in assuring that organized labor supported or at least acquiesced to the trade liberalizing features

of the bills. And similar legislative assurances of concern for the impact of pollution control might play a role in preventing a backlash against present pollution control objectives.

ISSUES IN DESIGNING AN ADJUSTMENT ASSISTANCE PROGRAM

It is not possible for a social scientist to design the optimal adjustment program at present. This is true for two reasons. One is that there is not presently adequate knowledge about how the economic system works in order to predict the consequences of alternative program designs. The second reason is more fundamental and cannot be solved simply by more research. The first step in program design involves the specification of the objectives to be achieved and the standards by which program performance will be judged. Decision making on these objectives and standards is basically a normative matter. These decisions must be made in a political framework rather than by social scientists acting in a technocratic framework. In addition to these normative judgments about program objectives and standards, program designers need more information about the structure of the system in which they are operating, i.e., they need better information as to how means are connected to ends.

In this section five areas are identified in which the answers to these normative and positive questions will shape the nature and form of an adjustment assistance program. The purpose of this section is to identify the questions which must be answered and to show how different answers to these questions lead to different consequences for program design.

Basic Objectives

In our economic framework there are two dimensions of economic welfare which can be identified as potential objectives of a program of adjustment assistance. One is economic efficiency, and the other is equity in the distribution of economic welfare. Efficiency in an adjustment assistance program means minimizing the total cost of adjustment. It emphasizes the reemployment of idle resources and speedy reallocation of resources from low productivity to high productivity uses, as well as the cost effectiveness of steps to speed reemployment.

The criterion of equity does not yield so precise a translation in economic terms. There are several ways of defining equity. For example, the equity concept could be framed primarily in terms of compensation for government induced losses. If equity were defined in terms of compensation,

adjustment assistance would be limited to defining and measuring economic loss and making payment to affected parties equal to their losses. The effect of such an adjustment compensation program is merely to shift the cost from the directly affected parties.

It is difficult to justify a complete shifting program such as this for three reasons. First, full compensation implies a judgment that the affected parties should bear zero per cent of the cost while non-affected parties must among them share 100 per cent of the cost. There is no a priori reason to believe that the affected people are either more or less deserving in an equity sense than those to whom the costs would be shifted. And the third reason points to a fundamental difficulty with pure equity criteria. When affected parties are fully compensated for their losses, this greatly reduces, if not eliminates their incentives to seek reemployment. Hence, total adjustment costs including lost factor income, could become much larger under compensation than they would if there were no public adjustment assistance program at all.

This last consideration, i.e., the relationship between compensation for equity and the effect of incentives on total adjustment costs suggests some combination of equity and efficiency criteria. This leads to the basic problem of multiple objectives in public program evaluation and design. The multiple objective problem has been discussed in the benefit-cost literature where a number of articles specifically discuss equity considerations as an objective (Freeman, 1969; Steiner, 1969; Freeman and Haveman, 1970). In general, the questions of objectives and trade-offs cannot be avoided. And the way it is answered affects almost every aspect of program design. Even attempts to avoid answering the question imply certain kinds of answers. And we believe that it is better to address the questions explicitly and openly rather than to dodge the issues.

Scope

The question here is whether adjustment assistance is to be made available for all cases of economic dislocation or whether it is to be limited to dislocation from specific causes such as tariff concessions or pollution control. This question must be resolved before one can deal intelligently with the problem of how to define case eligibility. If economic efficiency is one of the major program objectives, it is difficult to justify limiting adjustment assistance to only a a few specific categories. A dynamic economy is continually adjusting to changing economic conditions. The process normally is relatively smooth, and the costs of ad-

justment are relatively low, except for perhaps localized situations. Changes in public policy such as trade concessions may represent more discontinuous shocks to the economic system imposing the necessity for larger adjustments and higher adjustment costs. But if an efficient adjustment assistance program is available for assisting public policy induced adjustment, there is no reason inherent in the efficiency criterion that the program should not also be made available to assist an adjustment to privately induced changes in market conditions if total adjustment costs can be reduced thereby. In fact, as we saw in the analysis of trade adjustment assistance, there are major problems in determining causation. If proving causation is made a condition for case eligibility for adjustment assistance, the whole administrative process of eligibility determination becomes more cumbersome and time consuming. And the results may be inequitable in the sense that deserving cases may not meet the technical requirements for eligibility.

Aid to Firms

The firm is a legal entity distinct from the owners or the labor and capital which it hires and utilizes. If the basic program objective is equity, as expressed in a compensation criterion, there is no justification for direct aid to firms. Compensation and assistance should be rendered to the individual owners of labor and capital. Also there is a value judgment as to whether compensation for losses should be made available on equal terms to capital and labor. It could be argued that capital should not be eligible for compensation because supplying capital to a firm is an inherently risky proposition and the price of capital already reflects a risk premium to compensate capital suppliers for the risks that they bear. There does not seem to be a comparable "risk of unemployment" premium built into the wage structure except in explicitly seasonal occupations.

However, if efficiency in resource allocation is part of the objective of the adjustment assistance program, there may be justification for providing assistance to firms as entities. As stated previously, Bale argued that adjustment assistance to firms may be a cost effective way of aiding displaced workers (1973a). It is not a question of whether assistance enhances the probability of survival for the firm, but whether survival is consistent with a more efficient allocation of resources including and particularly the allocation of labor. Assistance to the firm is, in effect, a subsidy which increases the probability of survival of the firm. The economic efficiency criterion requires that the economic cost of the subsidy be weighed against the reduction in the overall

cost of adjustment. If adjustment costs are reduced by more than the amount of the subsidy, the subsidy is a cost effective way of promoting adjustment.

Under the Trade Expansion Act, adjustment assistance to firms took three forms: technical assistance, financial assistance, and reduced federal income tax liabilities. In addition, subsidies for pollution control expenditures might be considered as part of an adjustment assistance program. There are two points to bear in mind in considering this option, however. The first is that pollution control expenditures are already indirectly subsidized in several respects. Federal income tax regulations permit accelerated depreciation on pollution control expenditures that qualify. Purchases of pollution control equipment may be exempt from state and local sales taxes; and pollution control installations may be exempt from local real property taxation.* The second point is that any program to subsidize pollution control expenditures must define what a qualifying expenditure is. The rules defining eligibility for subsidy generally introduce a bias into corporate decision-making and planning with respect to pollution control, a bias which leads to an inefficient allocation of abatement resources. In other words, the bias distorts incentives facing private firms in such a way as to lead to private but not social cost minimization. This is because the least cost means of meeting a pollution control requirement often entails a variety of process changes, inplant modifications and input substitutions which would not qualify under any reasonably narrowly drawn set of rules for eligibiltiy for the subsidy. Firms may avoid undertaking those steps which are part of the least-cost solution in real terms because the subsidy rules make higher-cost options cheaper to them in financial terms (Freeman and Haveman, 1971).

Aid to Labor

The basic question in designing the adjustment assistance program for labor is how equity and efficiency objectives are to be related. If the program objective is pure equity and involves only compensation, then manpower training, job counseling and placement, and relocation assistance would not be part of the program package. But as pointed out above, a pure compensation program may reduce the incentive to find reemployment, and increase overall adjustment costs.

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*Until recently, firms could also get more direct federal subsidization through the municipal construction grant program (see Freeman and Haveman, 1971). This loophole was at least partly closed by the Clean Water Amendments of 1972.

The higher the degree of compensation, the lower the incentive for speedy reemployment. On the other hand, a pure efficiency criterion could lead to results which some would judge as undesirable. For example, if a sixty year old worker were laid off, it might not be cost effective in pure efficiency terms to retrain him or relocate him for reemployment. Pure efficiency would dictate that no adjustment assistance be granted to this worker. Yet equity considerations would call for some form of allowance or transfer payment to maintain the worker's income until he were eligible for social security. One difficulty in weighing the equity versus incentive and efficiency effects of adjustment benefits to workers is the lack of knowledge of how income maintanance benefits affect work incentives in the long run.

The second question for the design of an aid program for labor is the relationship between public expenditures for retraining, job counseling, relocation, etc., and their effectiveness in promoting reemployment. As was discussed in Section V, information on the cost effectiveness of these programs is scanty at best.

A third question for program designers is whether equity considerations justify providing a wider variety of benefits to displaced workers, specifically whether there should be compensation for lost seniority rights, allowances to enable continuation in health and life insurance programs, etc.

Aid to Communities

A judgment must be made as to whether some form of fiscal assistance to local governments should be included in the overall adjustment assistance program. Municipalities may respond to lost tax base in a variety of ways, including cutting back on some public services, or increasing the tax burden on remaining firms and households. Some of these responses might be counterproductive in the sense of impeding adjustment in the private sector. As in other elements of adjustment assistance, there are trade-offs between equity and efficiency here. One hundred per cent compensation for lost tax revenues without a time limit does not give towns incentives to make necessary adjustments including attempting to attract other industry to the town. Some decision must be made in program design concerning the percentage of subsidy and the time span for subsidy. A subsidy program might entail, for example, 80 per cent subsidy in the first year, declining to zero after the fourth year.

Aid to communities might instead focus on facilitating real resource adjustment through programs aimed at stimulating new investment and location of new business in the community.

However, the effectiveness of resources spent in this way to stimulate local development is in doubt.

A PROPOSAL

In this section we sketch out the elements of a model adjustment assistance program for pollution control. In developing such a model, it is necessary to make value judgments on some of the equity related issues which have been identified and discussed in the preceeding section. These value judgments are clearly indicated as such in the discussion which follows. In making these value judgments, we do not attempt to justify them as representing some political consensus or higher moral purpose. They are made here for illustrative purposes, to permit the working out of their implications for program design.

Also, as noted above, in designing a program it is necessary to make some choices about program elements without adequate data on which to predict the effectiveness of these actions, i.e., without adequate knowledge of the connections between means and ends. These areas of inadequate knowledge are also indicated in the following discussion.

We start with the objective fact of the existence of an adjustment problem, i.e., that there is a real resource cost to adjustment to pollution control requirements and that in the absence of public policy intervention private actions fail to minimize these costs. To this we add the normative value judgments that both efficiency (cost minimization) and equity objectives should be served by a program to assist adjustment which includes some degree of compensation to workers.

The model program would include a declaration of purpose as follows: "The purposes of this program are: to aid the reallocation of resources, particularly but not limited to labor, in adjusting to new patterns of demand and cost, so as to attain the most efficient possible use of the nation's scarce resources, capital and labor; and to compensate workers for significant economic losses incurred during the period of adjustment, or because of dislocation."

On the question of the scope of the program, we recommend that the program not be limited to dislocation from particular causes, e.g., pollution control programs. There are three reasons for this. First, as mentioned above, is the problem of determining causation. If eligibility for assistance is limited to cases with particular causes, then resources must be devoted to determining causation; this introduces another element of bureaucratic decision-making

and complication into the program. The second reason is one of equity. We see no reason in equity to condition eligibility upon the particular circumstances of dislocation. Dislocated workers are victims of adjustment problems, whatever their source. Our judgment is that victims should be treated alike. The third reason is pragmatic. It would be easier to build an effective political coalition for the passage of the program, the wider its distribution of benefits.

Accordingly we would make adjustment assistance available to labor under the following conditions:

1. Where injury in the form of unemployment or subemployment of a group of workers is found to exist or is threatened by . . .

2. The closing of a plant or the substantial curtailment of employment of a plant.

It is possible that policy makers may not share the value judgments expressed above, and may wish to limit the scope of adjustment assistance programs. For example they may wish to restrict the purpose of the program to aiding reallocation of resources where the changes in the patterns of demand and cost are the "direct consequence of changes in federal regulatory practices, tariffs or other policies affecting imports, federal purchases of goods and services, or location of federal facilities such as military bases." This language is meant to include micro policies of the federal government but to exclude displacement and adjustment problems arising from changes in macro fiscal and monetary policies undertaken for the purpose of stabilizing employment, prices, or the balance of payments.

Policy makers may wish to restrict further the scope of the program by limiting it to, for example, displacement caused by pollution control regulations. But in each of these cases, not only must the acceptable causal factors be carefully specified and defined, but a decision must also be made as to the degree of causality which is to be required. Is pollution control or whatever to be the "sole" cause of displacement? a major cause? a substantial cause? The experience with trade adjustment assistance should be instructive on this point. (See Section V.)

Turning to the form of assistance, assistance to workers would be patterned after the Trade Expansion Act of 1962, but modified as discussed in Section V, i.e., readjustment allowances set at a fixed percentage of a worker's pre-displacement wage, eligibility for training, counseling, job place-

ment, and relocation assistance. As with trade adjustment assistance continued readjustment allowances would be contingent upon accepting retraining and other job placement and counseling services if offered. In addition, the program would provide special compensation for seniority and loss of participation in group health and life insurance programs. For displaced workers between the ages of 60 and 65, the program would provide for payments to the 65th birthday in an amount equal to 75 per cent of the pre-displacement wage. Finally, for workers between fifty and sixty, there would be provision for similar allowances to the age of 65, where the allowance as a percentage of pre-displacement wage declined with decreasing age.

The program would provide for aid to firms patterned after the adjustment assistance provisions of TEA. However, the program would include a statement that the purpose of adjustment assistance to firms is to facilitate the reemployment of labor. To receive adjustment assistance, firms would have to submit adjustment proposals which demonstrated that the assistance would promote or contribute to the reemployment of presently displaced eligible workers, or contribute to the prevention of displacement; and officials would have to determine that assistance to the firm in each case was likely to be at least as effective in preventing further injury to workers as alternative expenditures on direct assistance to workers.

The program would include fiscal and development aid to municipal governments along the lines of the Hathaway proposal cited in Section V. Finally, and perhaps most importantly, the program would include built-in mechanisms for data gathering which would facilitate a full evaluation and analysis of the effectiveness of the program in achieving its purposes.

Although it would be valuable to know how much an adjustment assistance program such as this might cost, only the crudest sort of order-of-magnitude estimates are possible. The reasons should be clear: uncertainty about the nature and scope of the program, eligibility criteria, need (how many plants will close?), etc.

The budgetary implications of readjustment allowances are easier to estimate than funding requirements for retraining or assistance to firms. A report to the Council on Environmental Quality estimated that between 50,000 and 125,000 jobs would be lost due to pollution control requirements in the five year period 1972-76 (Council on Environmental Quality, 1972, p. 11). This is an overestimate of the number of workers who would be eligible for assistance since some part

of the job loss would be widely scattered representing marginal losses at surviving facilities. On the other hand, this estimate does not take into account the more strict pollution control requirements contained in the 1972 Amendments. Therefore we assume a job loss at the upper end of the range, i.e., 125,000, or 25,000 per year.

In Bale's study of trade adjustment assistance, 86% of his sample were found eligible for assistance (Bale, 1973a). We assume 90% are eligible. Further assume that all eligible workers apply for and receive readjustment allowances. The Department of Labor reported that the average allowance was $2400 and the average duration of payment in 1971 was 28 weeks (Department of Labor, 1971). We assume each eligible worker receives $100 per week for 28 weeks. The total is $63 million per year.

To this, of course, must be added: special payments to older workers; payments for seniority or loss of fringe benefits, if any; costs of running retraining programs; additional allowances for participants in retraining programs; relocation allowances; assistance to firms; and assistance to municipalities, if any. But the magnitude of these additional payments can only be estimated after decisions about the nature of the program have been made and after more data have been gathered.

ADJUSTMENT ASSISTANCE UNDER PRESENT FEDERAL PROGRAMS

The problem of preparing for the impact of plant closings due to pollution control is with us now. And in fact, closings have already occurred and will continue to occur which may be attributable to pollution control requirements among other things. It is only realistic to recognize that even if a political decision were made now to push for an adjustment assistance program, it would take time to prepare the legislation, go through the legislative process of hearings, etc., and gear up the administrative machinery to operate an effective program. The purpose of this section is to examine ways in which state and local governments might prepare themselves to take advantage of existing federal programs which could ease them through potential adjustment problems.

What existing federal programs could be tapped to put together a viable adjustment assistance plan for a community faced with a severe economic impact such as a plant closing? A list of relevant federal manpower, poverty, and community development programs was compiled. In the Appendix, summary information on program objectives, description, and responsible agencies is provided for each program.

Several interesting points emerge from going over this list. First, the list of manpower programs included in the Appendix coincides with the list of manpower and training programs which are available to eligible workers under the adjustment assistance provisions of the Trade Expansion Act. The training and employment services provisions of that Act specify that only eligible workers may receive the full range of services from these programs. We see no legal or technical barriers to a state making coordinated use of the full range of training and employment services in the same way that they would if the case came under the adjustment assistance provisions of TEA. Rather, the barriers are administrative and budgetary, that is the difficulties and bureaucratic lags in getting new programs in new areas of need, and the fact that most of these programs are presently underfunded.

Under adjustment assistance, the TRA benefits were distributed through the state employment offices. The state employment offices were also the distributors for the other manpower and employment services. Thus, states already have a mechanism for tapping into the federal manpower and employment service programs, and have an administrative machinery with some experience in delivering manpower services to its citizens. This should be recognized as an asset and utilized in the development of the ad hoc adjustment assistance policies.

In their efforts to meet adjustment needs at the state or local level, there are some specific problems which states must make an effort to resolve. One of these is that states must be prepared in advance with contingency plans as to administrative machinery, objectives, and strategies for obtaining federal program assistance. The states must also make an effort to identify the potential need areas and to develop an early warning network, so that contingency plans can be started in advance of actual need.

If states wish to make benefit payments to displaced workers at a level above, or for a period of time greater than that of their unemployment compensation system, they will have to raise budgetary funds themselves. In addition, if they wish to expand the coverage of the program in some of the ways discussed in Section V, they will have to raise and budget the funds themselves, because there are no counterpart federal programs to be utilized. For example, if the state wishes to ease fiscal impact to the local communities, they will have to accomplish this at the state level. Also if a state's ability to tap federal manpower programs is insufficient to its own manpower needs, or if it decides that it should do something about the problems of older workers (loss of pension rights, loss of essential fringes, reduced reem-

ployability), it will have to plan for and budget those forms of assistance itself.

As this report was being completed, it came to our attention that recent legislation had substantially modified the organization and administration of manpower programs in the U.S. The Comprehensive Employment and Training Act (CETA), which became law in December, 1973, establishes a flexible and decentralized system of manpower programs to replace the various categorical programs. CETA has the purpose of transferring the responsibility and the funds for manpower program development and operation to states and localities. CETA is discussed and its main provisions outlined in the President's Manpower Report (Department of Labor, 1974, pp. 37-44).

ON ESTIMATING THE REGIONAL IMPACT OF PLANT CLOSURES

This section reports on an attempt to estimate the magnitude of possible adjustment problems which might be associated with plant closings in representative cases. The results of these efforts were inconclusive and did not lead to useful generalizations, in part because of the inadequate state of regional economic theory and modeling techniques, and in part because of the varieties of situations that can be expected to be encountered. Nevertheless the discussion which follows may be useful to state and regional officials charged with assessing potential needs and planning for adjustment policies in their jurisdictions.

After examining the economic and industrial pollution control situations in Maine, three hypothetical cases were postulated as representative of the range of possible problems that might be encountered in the state as industry moved to meet new pollution control requirements. The cases were:

Case I -- a small plant in a small town;

Case II -- a large plant in a medium size city; and

Case III -- a large plant as dominant employer in an isolated town.

Examples of each of the three cases within the state of Maine were identified; and socioeconomic data from the 1970 Census and from other sources were used to construct hypothetical economic profiles of the three cases to be analyzed. Some of these data are summarized in Table 1.

The small plant of Case I employs 200 workers but only about half of these reside in the town, the remainder coming from neighboring towns. The large plant of Case II is located in

Table 1. SUMMARY DATA ON THREE HYPOTHETICAL CASES OF ECONOMIC IMPACT ANALYSIS

	Case I	Case II	Case III
1. Plant Employment	200	1,000	2,000
2. Plant Payroll	$1,300,000	$10,000,000	$22,000,000
3. Characteristics of Town			
a. Population	2,300	25,000	15,000
b. Labor Force	1,000	10,000	5,000
c. Median Family Income	$7,700	$8,900	$9,000
4. Characteristics of Economic Region			
a. Population	90,000	50,000	25,000
b. Labor Force	35,000	20,000	8,000

the center of a substantial concentration of population and workers. Employment at the plant is about 1,000, of which almost 75% come from the city. In Case III, the plant employment is large compared to the local population and labor force. In contrast to Case II since the town is relatively isolated, the bulk of the plant employment (about 75%) resides in the town.

The fact that not all of the plants' workers reside in the same towns as the plants leads to one of the major problems in applying regional economic theory to the analysis of economic impact. This problem is the definition of the region as a unit for analysis. It is clear, particularly in Case I, that the town is too small a unit for analysis. The town is only a part of a larger economic region within which there are important multiplier and linkage interactions. In other words, if the plants were to close in these cases, the multiplier and linkage effects would spill over beyond the boundaries of the towns.

The Maine Department of Manpower Affairs has divided the State into Economic Areas for the purposes of data gathering and analysis. These Areas were defined on the basis of a "population and manufacturing employment cross-sectional evaluation (Maine, 1972)." This classification corresponds most closely to the "nodal point" basis of regional definition, i.e., constructing each area around a major center of economic activity. Hypothetical summary data on the Economic Regions of which the three towns are members are also presented in Table 1.

As the Table shows, neither the plant nor the town in Case I are significant components of the economy of the Economic Region. In comparing Case II and Case III, in the former both the city and the region are larger than in Case III, but the city plays a smaller role in the Economic Region in Case II.

As was discussed in Section IV, if a plant is shut down, there will be multiplier effects on income and employment, at least in the absence of countervailing changes in regional aggregate demand. Multiplier analysis could be used to project a maximum possible regional impact following from a plant closing. One approach to estimating impacts is to construct an empirical model of the Economic Region and use existing economic theory and empirical techniques to estimate the empirical value of the regional multiplier.

An alternative approach, the one utilized here, is to review existing regional economic multiplier studies and to make adjustments to the multiplier values derived for other re-

gions on the basis of a priori reasoning and judgment.* On the basis of these studies, a range of values was chosen for the employment multipliers and income multipliers, both for the town as a unit and for the Economic Area as a unit of analysis. The ranges were:

Employment Multiplier:
Local -- 1.1 - 1.5
Area -- 1.25 - 1.75

Income Multiplier:
Local -- 1.2 - 1.4
Area -- 1.5 - 2.0

The magnitude of the multiplier is inversely proportional to the extent of leakages from the region being analyzed. On the assumption that the smaller the unit of analysis, the greater the leakages as a proportion of total spending and employment, the town multipliers are smaller than the area multipliers. In addition, it is postulated that in the relatively short run, there is a tendency to maintain employment in the face of a local business downturn, if possible and until expectations of continued decline require the adjustment of employment levels in the service sector. For this reason, the percentage reduction in employment in the short run would probably be less than the comparable percentage loss in income. Accordingly, the range of employment multipliers was chosen to be correspondingly lower than the range of income multipliers.

What would happen to income and employment in these three cases if the plants were to close? Applying the range of multiplier values to the presumed loss of employment or loss of payroll yields a wide range of impact. Changes in town employment range from a minimum of 7% in Case I to a maximum of 52% in Case III. The effects on regional employment in Case I are much smaller because of the small importance of the town to the economy of the Economic Region. Percentage changes in employment range from .5% in Case I to 42% in Case III.

Because the income multipliers are larger than the employment multipliers and because income per worker in the industry in question is above regional average, projected percentage changes in town and regional income are greater. The projected change in town income ranges from 11.5% in Case I

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*Studies reviewed included Weiss and Gooding (1966); Thompson, (1959); Terry, (1965); Garnick (1970); and Anderson, (1970).

to 75.9% in Case III. Projected changes in regional income range from .7% in Case I to 75.1% in Case III. The latter figure reveals the extreme importance of the plant in question to the regional economy in Case III.

The multiplier impacts described here are based on the assumption that the primary employment and income losses are equal to plant employment and payroll. The employment and income multipliers were applied to these data. If the plant is a major consumer of raw materials supplied from within the region, then employment and income in the supplier industry will also be reduced. The multipliers should be applied to the combined losses of employment or income. In other words the plant and its associated suppliers should be treated as a unit for purposes of multiplier analysis.

It should be emphasized that the multiplier analysis yields a prediction of the maximum changes in aggregate employment and income in the absence of offsetting private or publicly induced adjustment responses. It does not itself provide a measure of the need for adjustment assistance benefits. For example, if some combination of public and private actions resulted in the immediate reemployment of all workers displaced by a plant closing, aggregate income and employment losses would be zero. Or if transfer payments were used to maintain the disposable income and expenditure levels of displaced workers, there would be no additional loss of employment and income, i.e., the effective multipliers would be equal to one. However, if the displaced workers responded by relocating and finding employment outside of the region, their loss to the regional economy would cause further reductions in regional employment and income through the multiplier process. And there would be adjustment costs associated with those indirectly displaced workers. It should be noted, however, that the proposed adjustment assistance program would not provide benefits to these indirectly displaced workers.

The multiplier analysis described here focuses on the macro problems of adjustment. Public officals charged with responsibility for planning for economic adjustment should also review a wide range of data relevant to the microeconomic aspects of adjustment. For example, has the population of the region been growing or contracting? A growing region is more likely to provide opportunities for the assimilation of displaced workers than a stable or declining one. What are the educational characteristics of the population as a whole, and of the displaced workers? Physical characteristics of the housing stock and its division between rental occupancy and owner occupancy may shed some light on the potential geographic mobility of the labor

force. The condition of the regional labor market is important. The regional unemployment rate is an indicator of the ability of the regional economy to absorb the displaced workers. Occupational and skill characteristics of the labor force are important, as is their place of employment. Where substantial numbers of the workers of a particular region are employed outside the region, the labor market characteristics of the adjoining regions must also be taken into account in planning for adjustment.

SECTION VII

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SECTION VIII

APPENDIX

EXISTING FEDERAL PROGRAMS WITH ADJUSTMENT ASSISTANCE POTENTIAL

I. **INSTITUTIONAL TRAINING**

A. Authorization: Manpower Development and Training Act, 1962 as amended

B. Agency: Manpower Administration, U.S. Department of Labor and Office of Education, U.S. Department of Health, Education and Welfare.

C. Objectives: to provide classroom occupational training and related supportive services to unemployed and underemployed persons who cannot obtain appropriate full time employment.

D. Program Description: This assistance is provided in the form of formula grants and income support. Eligible applicants must be unemployed or underemployed persons who need training or retraining to gain employment. To receive training allowances, the applicant must also be head of a household (or a member of a family whose head is unemployed) and have one year's experience of gainful employment.

Primary emphasis is placed on classroom training. MDTA skill centers -- centralized facilities which offer education and training opportunities, with needed supportive services -- are an integral part of institutional training. Changes in program administration in 1970 shifted responsibility for project approval from national and regional offices to the states.

E. References: Manpower Report of the President, FY 1971 and 1973.

II. JOB BANK

A. Authorization: Wagner-Peyser Act; Manpower Development and Training Act, 1962 as amended; Social Security Act.

B. Agency: Manpower Administration, U.S. Department of Labor.

C. Objectives: To provide maximum exposure to job openings on a current basis to applicants seeking work.

D. Program Description: Funding is in the form of matching grants to the states. The program is administered by state employment security agencies who maintain information on jobs available. All persons seeking work are eligible to receive this information.

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973.

III. ON-THE-JOB TRAINING (O.J.T.)

A. Authorization: Manpower Development and Training Act, 1962 as amended.

B. Agency: Manpower Administration, U.S. Department of Labor; Office of Education, U.S. Department of Health, Education, and Welfare.

C. Objectives: to provide on-the-job occupational training for unemployed and underemployed persons who cannot reasonably find appropriate full-time employment without training.

D. Program Description: On-the-job training assistance is given in the form of project grants and training. Applicants must be state employment agencies or local organizations able to carry out the objectives of the program. Beneficiaries must be unemployed or underemployed persons 16 years of age or over who cannot find full-time employment without training.

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973.

IV. JOURNEYMAN TRAINING

A. Authorization: Manpower Development and Training Act, 1962 as amended.

B. Agency: Manpower Administration, U.S. Department of Labor; Office of Education, U.S. Department of Health, Education and Welfare.

C. Objectives: to retrain or upgrade persons to be journeymen-tradesmen in the various building and consturction crafts.

D. Program Description: Journeyman training assistance is provided in the form of project grants. Local organizations able to carry out the objectives of the program are eligible for grants. The beneficiary must be a member of a minority group who wants to pursue job opportunities in the construction and building trade occupations. In addition, the beneficiary must meet the age, aptitude, physical and educational requirements designated for the various occupations. This program was new in FY 1970.

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973.

V. JOB OPPORTUNITIES IN THE BUSINESS SECTOR (JOBS)

A. Authorization: Manpower Development and Training Act, 1962 as amended.

B. Agency: Manpower Administration, U.S. Department of Labor.

C. Objectives: to stimulate private industry's interest in hiring and retraining the hard-core unemployed.

D. Program Description: The JOBS program is operated by the U.S. Department of Labor, Manpower Administration, in conjunction with the National Alliance of Businessmen and state unemployment security offices. Assistance is provided in the form of reimbursement to cover the extra costs of hiring and retraining the disadvantaged. JOBS also provides supportive services for enrollees.

All private sector companies, regardless of size,

willing to hire and retrain the hard-core unemployed are eligible applicants. The beneficiary must be a person whose income is below the poverty level, who is without suitable employment and who is a school dropout. All beneficiaries must be under 22 or over 45 years of age, handicapped or subject to special obstacles to employment.

E. References: Manpower Report of the President, March 1973.

VI. WORK INCENTIVE PROGRAM -- TRAINING AND ALLOWANCES (WIN)

A. Authorization: Manpower Development and Training Act, 1962 as amended.

B. Agency: Manpower Administration, U.S. Department of Labor.

C. Objectives: to move men, women, and out-of-school youth aged 16 or older from welfare roles into meaningful permanent productive employment through appropriate training and related services.

D. Program Description: The WIN program is required for all AFDC recipients (with some exceptions listed in section 7 of the amended law). State employment service offices administer the program, and refer beneficiaries directly to jobs. Participants are permitted to retain the first $30.00 of monthly earnings, plus one-third of the remainder and a limited amount to cover work related expenses with no reduction in AFDC benefits. In addition, WIN attempts to coordinate with supportive services programs such as child-care, housing, and family planning, thus creating additional work incentives. Training is provided when necessary.

Employers are given tax credits in the form of 20% of wages paid to WIN participants in the first year of employment. Employers are expected to retain participants in unsubsidized jobs for 12 months following the year for which credit is claimed, or the credit will be reclaimed by the federal government.

The federal government assumes 90% of the cost of the program, thus encouraging state participation. Funds are distributed to the states in

direct proportion to the number of AFDC recipients. The state WIN sponsor is responsible for all manpower aspects of the program, with daily operating responsibility delegated to local staffs.

E. References: Manpower Report of the President, March 1973.

VII. JOB CORPS

A. Authorization: Economic Opportunity Act of 1964.

B. Agency: Manpower Administration, U.S. Department of Labor.

C. Objective: to provide training to disadvantaged youth in a residence away from his normal environment.

D. Program Description: Industries or public or nonprofit private agencies able to carry out the objectives of the program are eligible applicants. Beneficiaries must be U.S. citizens between the ages of 14 and 21 years who have been school dropouts for three months or more, unable fo find work or hold an adequate job. In addition, they must be underprivileged and in need of a change in environment, who do not have a history of criminal or anti-social behavior. They must express a firm interest in joining the job corps and agree to a minimum stay of 90 days. Young men and women enrollees receive specialized vocational training, as well as basic, general education, counseling, and help in improving work attitudes and habits.

E. References: Manpower Report of the President, March 1973.

VIII. APPRENTICESHIP OUTREACH

A. Authorization: Manpower Development and Training Act, 1962 as amended.

B. Agency: Manpower Administration, U.S. Department of Labor; Office of Education, U.S Department of Health, Education and Welfare.

C. Objectives: to seek out qualified applicants from minority groups and to assist them in entering apprenticeship programs, primarily in the construction trades. The program seeks to promote the employment of minorities, but also locates, motivates, guides and assists minorities to enter registered apprenticeship training programs.

D. Program Description: Assistance is provided in the form of project grants. Local organizations able to contract and carry out the objectives of the program are eligible applicants. Any member of a minority group who wants to pursue job opportunities that are available through apprenticeship occupations is an eligible beneficiary. Beneficiaries must also meet age, aptitude, physical and educational requirements designated for the various occupations. This program was new in FY 1970

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973.

IX. OPERATION MAINSTREAM

A. Authorization: Economic Opportunity Act of 1964.

B. Agency: Manpower Administration, U.S. Department of Labor.

C. Objectives: to provide work-training and employment activities, with necessary supportive services for chronically unemployed poor adults, who have poor employment prospects and are unable to secure appropriate employment or training assistance under other programs.

D. Program Description: Operation Mainstream is a small program,almost entirely rural. Emphasis is placed on hiring displaced farm workers who have little or no non-farm experience and who lack formal training. Projects are established to provide meaningful work experiences along with some basic education and counseling services. Most of the projects concentrate on enhancing the beauty of rural areas. Projects have been sponsored by the National Farmers Union, the National Council of Senior Citizens, the National Retired Teachers Association, and the National Council on the Aging.

State and local government agencies and private, non-profit organizations administer the program. Primary emphasis is placed on establishing projects in rural areas or towns. The beneficiary must be an adult, 22 years of age or older, who is chronically unemployed, and has an annual family income below the poverty level. Priority is given to older people.

E. References: Manpower Report of the President, FY 1971, and 1973.

X. LOANS FOR BUSINESS AND DEVELOPMENT COMPANIES

A. Authorization: Public Works and Economic Development Act of 1965.

B. Agency: Economic Development Administration, U.S. Department of Commerce.

C. Objectives: to encourage private investment by providing low interest, long term loans to help businesses expand or establish plants in redevelopment areas. Long term goals include the reduction of unemployment and underemployment, increased incomes, stimulation of economic growth, and attempts to deal with the associated problem of out-migration of population. These loans are primarily for projects that cannot be financed privately.

D. Program Description: Any individual, private or public corporation, or Indian tribe is eligible to apply for economic development loans provided that the project to be funded is in an area designated as eligible at the time of the application. Qualification for EDA assistance is generally based on high unemployment or underemployment. Eligibility is also dependent on other factors such as prospective employment impact, and viability of applying business' operations. The applicant must present documentation supporting the financial and engineering feasibility of the project.

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973; Annual Report of the Secretary of Commerce, FY ending June 30, 1973, 1972, 1971, and 1970.

XI. ECONOMIC DEVELOPMENT - GRANTS AND LOANS FOR PUBLIC WORKS AND DEVELOPMENT FACILITIES

A. Authorization: Public Works and Economic Development Act of 1965.

B. Agency: Economic Development Administration, U.S. Department of Commerce.

C. Objectives: to assist in the construction of public facilities needed to initiate and encourage long-term economic growth in designated geographic areas where economic growth is lagging behind the rest of the nation. Public work grants and loans enable communities to expand services so that industry will be encouraged to expand or locate in the area. These loans and grants also respond to requests from communities suffering from a sudden rise in unemployment because of a major plant closing.

D. Program Description: States, local subdivisions and other organizations representing a redevelopment area or economic development center are eligible to apply for and receive assistance. Applicants must describe the type of proposed facility, the extent of the cost, and direct job impact. It must be demonstrated how the proposed facility will have a positive impact on the economic development process in the community. Assistance is given in the form of long-term loans at low interest rates. Loan funds may be used for land acquisition or development, purchase or construction of buildings, and purchase or installation of machinery or equipment.

E. References: Manpower Report of the President, FY 1970, 1971, 1972, and 1973; Annual Report of the Secretary of Commerce, FY ending June 30, 1973. 1972, 1971, and 1970.